Effects of Instant Activism:
How Social Media Hoaxes Mobilize Publics on GMO Labeling Issues

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Abstract

This study explored how people publically engage with a politicized science issue in a social media environment. In exploring this engagement, this studied identified new types of pseudo-activism phenomena generated by participants and proposed the concept of instant activism. Instant activism suggests that sensational cues initiate heuristic information processing in the lay public. This study suggested that instant publics perform supportive actions as a reaction to instant activism. Further, this study examined the effect of social media hoaxes as a non-profit organization's wicked tool. For purposes of this study, GMO (genetically modification organisms) labeling in the US was explored as the politicized science issue.

Grounded in two different theories, this study empirically examined both the perceptual and behavioral consequences of the new type of activism for the publics involved. Using motivated reasoning theory, Study 1 explored the development of instant activism by following the individuals' cognitive process. Results demonstrated that exposure to a hoax strategy had a significant impact on motivating participants to quickly process and respond to GMO labeling issues. Study 2 addressed the behavioral aspects of the instant public, building on the situational theory of problem solving. Results indicated that exposure to a hoax increased an individual's active communicative actions but had no effect on that individual's passive actions and embedded principles regarding GMO labeling issues. This early attempt to empirically examine social media hoaxes and GMO labeling issues discussed the theoretical and practical implications of the results.

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CHAPTER1. INTRODUCTION

Introduction

Both the communication of science to the public and calls to activism through social media have been important topics of discussion in the recent years. This study explores how people process social media messages and engage in communicative action for politicized science issues. Specifically, this study will examine the effect of social media hoaxes. Non-profit organizations for GMO (genetically modification organisms) labeling in the US have used hoaxes to elicit immediate public attention and support. These hoaxes. generate an individual's perceived issue involvement and motivate them to process related issues.

In July 2016, the United States Federal Government passed a law requiring that all foods containing GMOs be labeled. According to the statute, food producers do not need to explicitly indicate that their product contains GMO ingredients. Instead, the food producers have several options to identify their genetically modified products, such as use of a symbol, a 1-800 number, or a QR code. While labeling might be seen as a victory for constituents against the use of GMOs, the indirect labeling methods described certainly weaken the intent of labeling. Indirect labeling does not provide the consumer with immediate clarity on the content of their purchase. Many food companies, such as Nestle, have taken advantage of this loophole and use indirect labeling on their genetically modified products (Senapath, 2017).

The law has exacerbated tensions between the food industry and pro-labeling activist groups. Food companies support indirect labeling, asserting that the provision of

GMO information can be a cause of confusion for lay populations who lack the necessary science knowledge. On the other hand, pro-labeling groups argue that the violates the consumers' right to know. For example, activists claim that QR code labeling, which adds a step to the process of determining whether or not a food contains GMO and requires use of a smartphone, is not feasible for vulnerable populations, such as the elderly and lower classes.

In response to this legislation, non-profit organizations with a mission to support food labeling and end the sale of genetically modified foods (e.g., non-GMO project, Just Label It) actively use social media to publicize and propagate GMO labeling issues. Social media includes technical functions that encourage the public to participate in supportive actions by, for example, liking, sharing, and commenting (Men & Tsai, 2013). The interactivity and spreadability of social media enable nonprofits to directly communicate with the public and garner a large-scale reaction in a short period of time (Men & Tsai, 2013). Non-profits depend on social media to disseminate information about the flaws of the federal GMO labeling law and gather supporters for their social movement. In this way, nonprofits to use social media to create a movement that will push the federal government. At the same time, the relationships between public mobilization through social media and policy outcomes are still controversial. Grassroots mobilization, however, is generally regarded as a powerful influence on the political decision-making process, and social media has come to play a crucial role in grassroots organizing (Hestres, 2014). GMO labeling is a particularly cogent issue for the purposes

of this study because third party actors, such as non-profits, have indirectly framed US GMO regulatory decisions through social media (Hiatt & Park, 2013).

Recent iterations of social media activism depend on spreadability and create short-term and long-term goals. In the short term, social media activism targets lay individuals and encourages action (Lovejoy & Saxton, 2012). In the long term, social media allows activist groups to build a relationship based on deliberative consideration of the issue. This constitutes a different approach than the traditional social movement. In the traditional process of mobilization, non-profits build quality relationships with their stakeholders in order to transform those relationships into practical resources that support the organization's goals, including collecting donations, recruiting volunteers, and inspiring issue advocacy (Curtis, Edwards, Fraser, Gudelsky, Holmquist, Thornton, & Sweetser, 2010; Talor & Sen Das, 2010). Because social media mobilization inverts the traditional process of mobilization by placing action before relationship building, some scholars express concern that social media mobilization incites rather than informs the public, much like propaganda (e.g., Daniels, 2009).

Compounding these concerns are the methods through which nonprofits promote social media activism; nonprofits have spread hoaxes to support their advocacy interests. While not unique or exclusive to the nonprofit sphere, activists create hoaxes to justify their actions or generate support for their issues. Research suggests that hoax spreading is useful in warranting activists' claims (Veil, Reno, Freihaut, & Oldham, 2015). Furthermore, individuals tend to ignore nuance in order to make strict moral judgments about otherwise uncertain situations. Such decision-making is eased when the

public encounters a hoax. The hoax is especially valuable for decision-making when uncertainty around an issue is associated with scientific expertise (e.g., GMO related issues). Publics, as non-scientists, accept the hoax as an accessible cue to do heuristic reasoning, rather than expend cognitive efforts requiring scientific knowledge and literacy.

This paper examines the role of the hoax as both (1) an access point to understanding and decision-making for otherwise uncertain issues (e.g. complicated scientific ideas) and (2) the hoax as a tool used by activists to garner support. Despite the questionable ethics of the hoax as public relations strategy, nonprofits and activists are spreading hoaxes in social media to mobilize the public. The often inflammatory nature of the hoax and the connected nature of social media mean that related information and issues diffuse rapidly through networks of people and the overall effect of the hoax strategy is amplified (Men & Tsai, 2013). The hoax strategy, in that respect, is an effective way for the advocacy group to maximize public attention to and support for that issue in current communication environment (van der Linden, 2015b).

The public's uncertainty around GMOs is advantageous to activists seeking to mobilize the public in opposition to GMOs using hoaxes. Science issues, such as the diffusion of new technology, have been the main cause of the uncertain situations and, subsequently, social chaos (Friedman, Dunwoody, & Rogers, 1999; Santos & Aguirre, 2007). Ironically, real-life applications of innovative science technologies have elicited both avid support and fierce opposition (e.g., Conner, Glare, & Nap, 2003). While segments of society view new technology with positive expectations, social debates

inevitably accompany emergent technologies. These debates center on uncertain future risks and how they may or may not offset benefits as the technology comes into social use (e.g., building nuclear power plant; Ansolabehere & Konisky 2009). Further, because of increasing specialization, emerging science issues are becoming too complicated for non-experts to understand. The gaps in understanding between the scientist and the lay person means that the person lacks the scientific literacy necessary to understand or follow the scientists' decision-making process (Kahan, Peters, Wittlin, Slovic, Ouellette, Braman, & Mandel, 2012).

As a result, science issues are politicized and discussed apart from scientific reasoning in a process termed science issue politicization. In the public sphere, non-scientists emphasize the inherent uncertainty of science by questioning "scientific consensus done by scientists" (Bolsen & Druckman, 2015; Steketee, 2010; Oreskes & Conway, 2010). While empowering the public's voice can support intellectual inquiry, this type of questioning undermines the intellectual authority of the scientist, putting the non-expert public on the same level of authority as the expert scientist. One might commonly equate this non-expert public to politicians, but the non-expert public can be any one of many diverse social actors—politicians, corporations, religious groups, and activists. While science is a social process, the politicization of science issues such that these issues become mired in social controversy supports the values of these actors and legitimates their positions and their advocacy.

Because of the diverse array of actors involved, developing regulatory policies for GMO technology have been politicized. The risks and benefits of GMO technology

adoption are science issues, which should be studied objectively by scientific experts. Even though most scientists agree that GMO foods are not detrimental, GMO adoption issues have long been debated among diverse social actors, such as, scientists, politicians, and social activists, as well as those in the non-profit sphere (Kim, Kim, & Besley, 2013; McInerney, Bird, & Nucci, 2004). At the same time, GMO foods are popularly consumed in the United States. According to a news report, as much as 75 percent of the foods sold at American s supermarkets include genetically modified ingredients (Emery & Reymolds, 2015).

The politicization suggests rationales for these activists in leading the general population to heuristic information processing in which they come to suspect that anything called scientific fact is spoiled by political values and beliefs (e.g., Pielke, 2007). Communication scholars categorize the emphasized uncertainty in science issue politicization as misinformation—the spreading of "false, misleading, or unsubstantiated information" (Nyhan & Reifler, 2010, p. 304). As science is politicized, these activists identify possible problems and compromise the impact of credible sources from scientific experts. They transform crucial information into misinformation to form or reform individuals' opinions regarding the issues (Bolsen & Druckman, 2015). In a similar vein, once a science issue is politicized, individuals are more likely to be exposed to further misinformation on the issue, going beyond scientific or non-scientific categories to include further exaggerations that constitute hoaxes and rumors. Hoaxes and rumors are prevalent among general individuals and often regarded as part of the accessible, credible information available on uncertain politicized science issues.

Studies regarding pseudo-activism phenomena in the social media environment (e.g., slacktivism, hot-issue public) are prevalent. However, scholars and general populations tended toward naïve expectations that the phenomena would become meaningful activism and the participants would become active publics (e.g., Kristofferson, White, & Peloza, 2014; Lee & Hsieh, 2012; Morozov, 2009). In the current social media context, organizations might be tempted to generate instant publics and mobilize resources using quick-and-dirty tactics. Often before the naïve expectations can potentially come to fruition, organizations abuse the phenomena to advocate their own positions. They sway individual social media users' perceptions and manipulate their behaviors using hoaxes. The outcomes of this thesis would trigger the alarm and bring attention to pseudo-activism as a serious social problem. Pseudo-activism abuses social media in absence of social surveillance or other regulations.

Considering these circumstances, this study explores the activists' one-shot public mobilization strategy by developing the concept of "instant activism." The study also develops the concept of the "instant public" and differentiates it from the active public. In this study, the instant public refers to a lay individual who engages in social media activism as a reaction to sensational triggers without deliberative consideration. Although previous research has been conducted on public behaviors in online communication, no scholars have approached online communication using a public relations practitioners' strategic perspective. The public relations lens facilitates comprehensive discussion about why and how the instrumental masses are incited and used as a type of pseudo-public.

This study starts with a preposition that individuals with a high level of public activeness can suddenly appear in public spheres as a response to an external stimulus. This approach is different from the dominant approach in public relation fields. Previous research assumes that public activeness increases through internal "evolution" from a low level of activeness (e.g., latent public, awareness public) to a high level of activeness (e.g., active public) (e.g., Grunig, 1996; Kim & Grunig, 2011; Hanllahan, 1999). As an intervention within this "evolution," this study proposes and discusses the "instant public" and "instant activism" as new conceptions of online public activities that are regarded as pseudo-activism.

At the empirical level, this paper conducts two experiments to suggest the possibility of generating the instant public with simple cues at a short time and to understand their distinctive characteristic. Study 1 investigates how people are instantly drawn to an issue and start "cognitive information processing" grounded on motivated reasoning theory (Kunda,1990). Study 2 addresses how individuals are instantly motivated toward or directly engage in issue related "behaviors" through the situational theory of problem solving and the concept of communicative action for problem solving (Kim & Grunig, 2011). The main concepts and the process of this research are illustrated in Figure 1.

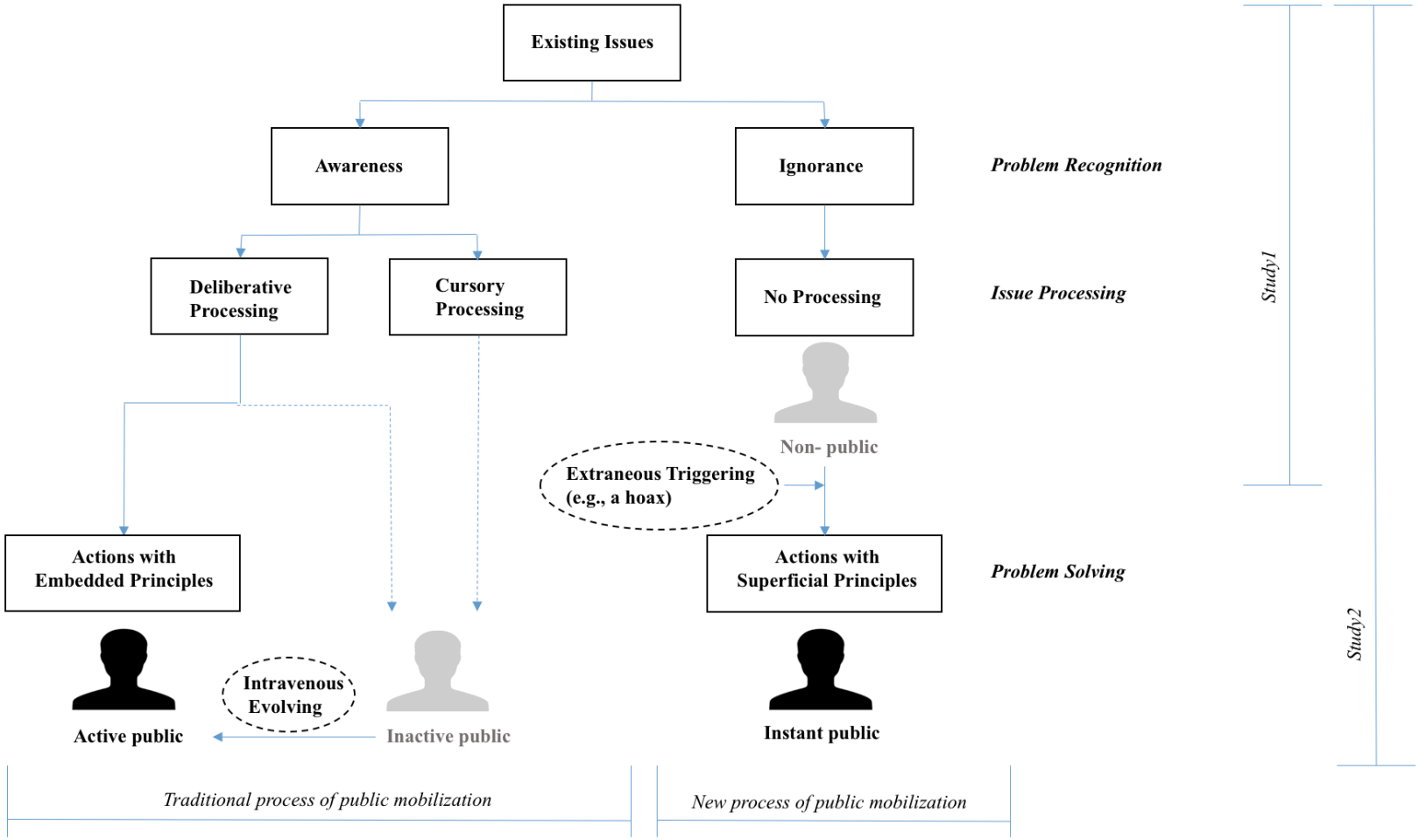

Figure 1. Conceptual Flow Diagram of This Thesis

Significance of the Study

This study aims to be a significant endeavor ringing the alarming to draw attention to the dangers of social media hoaxes. Before participating in pseudo-activism because of swaying a new kind of propaganda, social media hoax. In doing so, this study will suggest how the instant publics are generated under highly uncertain situations in relation to politicized science issues. Scholars have studied and debated the ethics of fake news and native advertising, which are closely aligned with hoaxes as deceptive messages in online spheres and are heated both in and out of communication research fields. Moreover, previous studies tend to have optimistic expectation toward social media activism. The risks of spreading hoaxes on social media, however, have yet to be studied and the dissemination of hoaxes continues.

For non-profit organizations, this study attempts to demonstrate limitations of a one-shot strategy in public mobilization for the activists. Moreover, the hoax strategy, which utilize deceptive instruments, creates a "legitimacy gap" between nonprofits' mission and their practice (Veil et al., 2015; Heath & Waymer, 2009). Thus, this study expects to arouse issue advocacy campaign organizers' attention in adopting unethical strategies despite treating their legitimacy.

This study aims to contribute to further advancement of activism and public segmentation literature. To do so, this study examines current GMO labeling issues in the application of existing theories (i.e., motivated reasoning theory, situational theory of problem solving), and then, compare the notable differences between current social

media activism and traditional activism. In this process, this study expects to find a new type of publics.

Organizations of the Study

The next chapter (i.e., Chapter 2) begins with a presentation of theoretical background that guides the following two studies: information processing and a typology of publics (Grunig & Repper, 1992; Hallahan, 2000). To understand how individuals are provoked to participate in public mobilization in uncertain situations—politicized science issues—this chapter compares current social media activism tactics to traditional strategies concerning individuals' information processing mechanisms. Specifically, grounded on the dual-processing model, the traditional public mobilization approach will be introduced, and then, use of hoax strategies in social media will be discussed with attention to the new route of information processing and social movement. Finally, the study proposes a concept of instant activism and instant publics that best explains the recent phenomena of public mobilizations on social media.

Chapter 3 further investigates the cognitive process provoked by instant activism, (introduced in Chapter 2,) and its grounding in motivated reasoning theory (Kunda, 1990). Then, the mediating power of issue confidence will be discussed in the relation to the subjective issue processing ability and the motivation to process GMO labeling issues. In this process, the effect of exposure to a hoax will be presented. In doing so, a 2(hoax strategy: presence versus absence) x 2(political ideology: presence versus absence) between-subject experiment will be conducted and analyzed.

In Chapter 4, the behavioral characteristics of the instant publics as a result of inciting instant activism will be examined based on the situational theory of problem solving (Kim & Grunig, 2011). Using the theory, two different information processing routes to participate in communicative action will be proposed. In proposing these routes, the effect of a hoax will be discussed in leading the general public to engage in supportive behaviors. To empirically verify the theoretical discussions, a 2 (hoax strategy: presence versus absence) x 2 (issue involvement: high versus low) between-subject experiment will be conducted. Chapter 5 will discuss the results of two different experiments from study 1 and study 2 in relation to the main propositions and concepts. Lastly, theoretical and practical implications will be discussed.

CHAPTER 2. CONCEPTUALIZATION

Public Mobilization and Message Processing

Traditional approach for resource mobilization with active public

Public mobilization is one of the most important instruments activists use to achieve their ultimate goals, which often include solving existing social problems and developing policies (McCathy & Zald, 1990). In gathering supporters for an issue, activists bring social attention to the issue and put political pressure on decision makers. Although the relationships between public mobilization and policy outcomes are still controversial, the grassroots mobilization is regarded as an effective factor in the political decision-making process (Hestres, 2014).

The resources, which are expected to be obtained from the supporters, require high level of behavioral activeness, including both cost and effort (e.g., participating in a rally and donating money). Costs have been regarded as a main predictor of social movement participation among general populations (Hon, 2015). In traditional activism, the supportive behaviors require the participants' time and money, and even come with social costs, such as isolation, job loss, and incarceration (Brodock, 2010; Glaisyer, 2010; Hon, 2015).

Public activeness for the high-cost and high-effort supportive behaviors are based in the active public's serious consideration of and embedded principles about the issue, as based in their issue knowledge and involvement. Thus, what one might consider "traditional activism," including marches, protests, sit-ins, and phone calls, focuses on

cultivating an active public that is highly involved and knowledgeable about the issue that is advocated by the activist group (Hallahan, 2001; Seo, Kim, & Yang, 2009). Thus, scholars and practitioners research the cultivation or segmentation of active publics, with the expectation that the active public differs from the non-active public (e.g., aware public, latent public, and non-public) and helps mobilize an issue.

Information processing, used to identify and segment publics, has widely been investigated in social science studies as well as the mass communication field. As explained, the embedded principles of an issue result from deliberative consideration of an issue. The labeling of deliberative consideration has enabled public relations scholars to identify and segment publics by applying the information processing approach (e.g., Grunig & Repper, 1992; Hallahan, 2001; Kim & Grunig, 2011; Kim, Kim, & Besley, 2013). Communication scholars have actively adapted dual-process theories, which refer to people's use of hybrid information processing systems along two different routes (e.g., The Heuristic-Systematic Model of Information Processing; Chaiken, 1980). The Elaboration Likelihood Model ((ELM); Petty & Cacioppo, 1986, Limited Capacity Model of Mediated Message Processing; Lang, 2000) provides analysis of media message processing, attitude change, decision-making, and problem-solving (Chaiken & Trope, 1999, Kim, Kim, & Besley, 2013). According to the theories that support the dual system, people deliberately consider accessible knowledge and use cognitive effort when they process an important message. This deliberative (i.e., slow, rule-based) information processing is regarded as *systematic processing* (Chaiken, 1980) or *central route processing* (Petty & Cacioppo, 1986). On the other hand, when people heuristically (i.e.,

quick-and-dirty, hasty, fast, associative) process information, they rely on mental shortcuts—accessible, simple cues—if they regard that the information is not important. This cursory—quick-and-dirty—approach to information processing is known as *heuristic processing* (Chaiken, 1980) or *peripheral route processing* (Petty & Cacioppo, 1986).

These dual-processing models assume that people are "economy-minded." For the individual, his or her judgment is the overriding determinant, minimizing cognitive effort and maximizing confidence (Chen, Duckworth, & Chaiken, 2009). Thus, each individual's level of motivation to process an issue would determine which type of processing he or she will perform (Chen et al., 2009). In other words, higher levels of motivation tend to elicit deliberative processing, whereas lower motivation tends to result in reliance on cursory processing.

The dual-processing approach differentiates individuals based on their public activeness, as determined by the level of issue knowledge and involvement (Hallahan, 2001). In regard to ELM, when people have a high level of involvement in and motivation for a specific issue, they process the issue with significant accessible knowledge and cognitive effort (Petty & Cacioppo, 1986). Hence, the individuals who process the issue through the central route are regarded as the active public in public relations literature. The active public is a group of individuals that is heavily involved in a certain issue with a high level of issue knowledge (Hallahan, 2001). This view indicates that individuals with a low level of activeness have the potential to evolve by considering

and processing an issue more carefully, collecting more information, or recognizing issue involvement once they aware of the issue.

Active publics have been discussed as important groups of people because of their behavioral activeness, which is different from other groups of individuals who have low involvement or limited knowledge regarding the issue (e.g., aware publics, aroused publics, inactive publics, or non-publics; Hallahan, 2001). Active publics are expected to continually monitor cross-situational social issues and be ready to participate in behavioral actions (Grunig & Kim, 2017). The leaders of social movements and special interest groups are examples of active publics. Under current circumstances, non-profit organizations' leaders and supporters also can be categorized as active publics. Non-profit activist groups organize their agenda to motivate others to be involved in their respective issues while maintaining high cognitive attention and active behavioral levels within existing membership (Krishna, 2016).

In seeking to understand active publics and harness this developed knowledge, previous public relations research focused on 1) informing and educating inactive publics so that they would recognize the problem and realize a sense of urgency in order to motivate publics and create active publics in response to a problem (Hallahan, 2000; Kim & Ni, 2013); and 2) building quality relationships with continually active publics as a long-term strategy to generate new and maintain present supporters (Taylor, Kent, & White, 2001).

This study assumes that the active publics have highly embedded principles regarding the issue based on enough consideration and their own opinion as a result of

deliberative issue processing. Active publics participate in most types of issues, supporting actions even if they require costs and effort (Hon, 2015). At the same time, they make response to the issue part of their day-to-day life. In the context of the GMO labeling issue, an active public is expected to not only support issue advocacy campaigns but also carefully check GMO information whenever he or she purchases food items. Thus, activism research has been focused on 1) the behavior of segmented active publics as opposed to other inactive publics and 2) the evolution of inactive publics into active publics.

New Approach for Visual Resource Mobilization with Non-Public

Even though the dual process approach suggests useful theoretical criteria to understand public segmentation, which helps public mobilization research, it has limitations that cannot fully encompass real world situations because of the approach's preconditions. The dual process approach assumes that when individuals face an issue, they process information in either a deliberative or a cursory way. Further, many public relations scholars and practitioners assume that most people have opinions on most issues (Kim et al., 2012). In addition to questioning the categorical assumptions of the dual-process approach, this study claims that there are many individuals who do not care about an issue at all. In this case, they ignore the issue and do not engage in issue processing. Hallahan (2001a) notes the existence of a non-public that has no involvement and no knowledge of a given issue. In the process of an issue circulation in society, some individuals tend to be "inattentive or cynical when the issue does not affect them directly" (Hallahan, 2001b).

This study claims that a different approach should be taken to understand the mechanism through which the non-public's awareness of a certain issue and engagement in activism about the issue develops. In this respect, the study suggests a new dichotomization of message processing as a pre-step of going into the dual processing: issue awareness and issue ignorance (engagement in message processing and non-engagement). Previous studies employing dual-process approaches place greater emphasis on understanding "how" people process issues (i.e., deliberative vs. cursory processing). Given that not all people participate in information processing (Hallahan, 2001b), especially where complicated politicized scientific issues are concerned, the study examines the process through which people make a decision about "whether " they are willing to process the message or not.

As previous dual-processing approach supporters suggested, an individual needs resources to process information, which come from involvement (Chaiken, 1980; Petty & Cacioppo, 1986), knowledge (Petty & Cacioppo, 1986), attitude (Krishna, 2016), and ability (Chaiken, 1980). People who begin information processing have at a least minimal-level of the resources necessary to prime issue processing. For example, Hallahan (2001b) asserts that an issue can be activated when an individual recognizes an inequity and tries to correct the problem.

Problem recognition has been regarded as a crucial factor in determining whether or not people will pay attention to an issue or participate in related behavioral actions out of necessity (Hallahan, 2001a; Kim et al., 2012). A problem can be defined as a situation in which people perceive a gap between the present state and the desired state

(Kim & Grunig, 2011). When individuals face an uncertain situation, which makes them feel something discomfort, they recognize the situation as a problem. Once an individual regards a situation as "a problem" and not "a general issue," he or she has the potential to engage in behavioral actions to understand and solve the issue (Kim et al., 2012). Thus, the recognition of a problematic situation motivates the person to solve the problem by handling relevant information.

If a person has no resources or motivation to process an issue, however, he or she would bypass the issue without processing or judging the issue (i.e., "I don't care about it," "It is not my business"). The bypass is particularly prevalent in politicized science issues, such as GMO labeling issues. When faced with politicized science issues, lay individuals tend to abandon engagement in issue processing or decision-making. Processing politicized science issues requires not only an understanding of complex scientific material or a level of technical expertise but also the ability to make logical comparisons between competing arguments from a bi- or even tri-polarized group of experts. As a result, individuals who are unfamiliar with science and science issues are unwilling to follow the abstruse issues and have little, if any, motivation to process (Taber & Lodge, 2006). Thus, individuals with no or limited resources for issue processing, the so-called non-public, has been ignored by scholarly research on activism and public mobilization campaigns.

This dichotomous approach to issue awareness should be considered as a means of explaining current social media activism. The approach suggests a focal point for a new kind of activism that excludes active publics, which are the main actors in traditional

issue mobilization strategies. This study focuses on current social media public mobilization targeting non-publics who exclude themselves or who are excluded from activism with the purpose of exploring instant public mobilization. Ironically, non-publics can be easily swayed, even manipulated, to advocate activists' issue positions since the non-publics do not have previous knowledge or experience to make an informed decision. Thus, easily accessible information can incite non-publics by bringing immediate awareness to an issue, supporting biased processing, and manipulating decision-making, all to provoke a response by the nonpublic that it follows the cue promptly. This study is interested in investigating how non-publics can engage in public behaviors, such as communicative actions. For example, previous research claims that repeated negative media reports attract non-active publics who had no prior awareness of the problem (Kim et al., 2012). Going beyond negative reporting, this study will explore how hoax strategies are used to mobilize the non-active public and encourage public behaviors.

To understand a part of activists' issue activation process, this study examines a phase of current social media activism. To be specific, this study investigates the phenomena in which non-profits as activists disseminate heuristic cues to incite individuals to support their issues. In doing so, the last part of Chapter 2 examines how the social media environment facilitates this quick-and-dirty strategy. Chapters 3 and 4 use empirical studies to support claims about this process by which non-publics, made up of lay individuals, are motivated by and behave in response to cues.

Spreading Hoax and Public Mobilization in Social Media

Social media plays an important role in the non-profit organizations' communications with stakeholders as well as the general population (Nah & Saxton, 2013; Curtis et al., 2010; Bortree & Selzer, 2009; Waters et al., 2009). Due to the interactivity and spreadability of social media, nonprofits can send messages directly to the publics and get a reaction in a short period of time (Nah & Saxton, 2013). Recent research indicates that nonprofits use social media to gather supporters who "do something" for the organization (Lovejoy & Saxton, 2012). In other words, nonprofits can build meaningful relationships via social media to mobilize publics and achieve their goals—promoting an event, publicizing donation appeals, recruiting volunteers, and advocating issues (Curtis et al., 2010). Nonprofits thus employ various strategies adapted for social media environments to effectively mobilize publics (Lovejoy & Saxton, 2012).

Hoax spreading is one of the advocacy groups' social media strategies. Hoaxes refer to "deceptive alerts designed to undermine the public's confidence in an organization, product, service, or person" (Veil, Sellnow, & Petrun, 2012, p.328). Hence, hoaxes are generally associated with powerful individuals or groups who are suspected of secretly plotting to accomplish some unjust goal. The hoax then undermines the authority of those types of individuals or groups more generally who use scientific reasoning to accomplish their goal (van der Linden, 2015a). Activists create hoaxes, which often capitalize on existing conspiracy theories, by tailoring a message to justify their activities or to bring attention to issues they advocate. According to previous research, hoax spreading is useful in addressing the non-public because it legitimizes the activists'

claims while delegitimizing targeted organizations (Veil, Reno, Freihaut, & Oldham, 2015).

While some activists disseminate hoaxes intentionally to garner public attention and elicit public support, others do so incidentally. Some activists spread hoaxes without awareness that the information is inaccurate. Incidental hoax spreading occurs because, like the lay public, not all activists are experts who have scientific knowledge and literacy. They might unwittingly spread scientifically inaccurate data because it supports their position on an issue and thus aligns with their own knowledge of the issue (Kata, 2010). Krishna (2016) empirically indicates that there are people who are very high in his/her problem-specific motivation and activeness levels about an issue as a result of significant and even long-term acquisition of defected knowledge about that issue. However, regardless of whether a hoax is created or delivered by activists, it is undeniable that hoax spreading aims to incite publics and manipulate their behaviors through this inaccurate messaging (Veil, Sellnow, & Petrun, 2012).

Unfortunately, the hoax strategy can maximize public attention and give the appearance that the issue and the advocacy group have public support (van der Linden, 2015b). Furthermore, exposure to hoaxes manipulates the nonpublic, causing them to employ heuristic decision-making as they oversimplify an issue and the related problems in an effort to complete a cursory processing of the issue (van der Linden, 2015a). In this regard, the activists' hoax spreading strategy closely aligns with issue politicization as a communicative tactic to influence public opinion formation or attitude change. Interest groups, individual activists, and other actors execute both hoax spreading and issue

politicization (e.g., Bolsen & Druckman, 2015; Veil, Reno, Freihaut, & Oldham, 2015). In relation to science issues, non-scientists selectively borrow scientific evidence, as it aligns with their own well-informed or misinformed positions and beliefs, to support their political agenda. Because one politicization method includes offering false information (Nyhan & Reifler, 2010), hoax spreading sub-method of issue politicization as well as an amplifier of the politicization.

Hoax spreading can also be categorized under traditional communication strategies as propaganda (Daniels, 2009). Typically, propaganda has come from people in positions of authority with access to message transmission through traditional mass media outlets, such as television, radio, and newspapers. As Shirky (2008) has argued, however, digital media, particularly online communication, has supported a power shift, taking power from elite media owners/influencers and transferring that power to a broad public. Thus, previous media minorities—small non-profits and individual activists—can now use wide reaching strategies to spread awareness of their advocacy issues and garner public support despite their limited resources (Katz, 1998).

This strategy is effective in generating vocal outcomes in an issue advocacy campaign, especially in social media. The spreadability and propagativity of social media amplifies the effect of the hoax strategy by increasing public attention rapidly. Social media activism is public mobilization that targets networked general populations who communicate continually (Shirky, 2008). Non-profits can mobilize a certain issue for communication among social media users by spreading the message through the network.

Social media fosters environments that seek to eliminate physical divisions, thus diminishing the amount of time and effort that separates the information awareness step from the engagement in supportive actions step. Hoaxes, which are originally spread by activists, can be rapidly diffused throughout networked publics. In this process, an individual acts not only as a hoax receiver but also as a hoax spreader with simple behaviors, such as clicking, liking, sharing, or commenting (Skoric, 2012). These low-cost and low-effort behaviors further disseminate the message and become issue advocacy actions themselves. Moreover, these simple behaviors in social media issue mobilization do not demand considerable costs for the participant, which are more common when engaging in traditional social movements (e.g., Hon, 2015)

For these reasons, the social media hoax strategy targets lay individuals as non-publics and encourages those lay publics to engage through simple actions. These simple actions are visible indicators of support and do not require lay publics to embed principles related to the issue. As Earl and Kimport (2011) argued, the digital mobilization strategy gives participants more cost affordances because digital activist techniques usually require minimal time and effort. Individuals can participate in actions without experiencing the limitations of time and place as well as the dangers of social stigma that can plague protesters. In this regard, when an individual is instantly motivated to process an issue because of exposure to a hoax, he or she can participate in social media action to support their decision without carefully considering their position or engaging in a high-effort activism. Previous research suggests that people enjoy participating in these activities, increasing their perceived efficacy without the effort of

deep consideration (Breuer & Groshek, 2014). Thus, hoax spreading can be a quick-and-dirty strategy in online mobilization that avoids cultivating and evolving non-active publics into active publics.

Despite the effectiveness of the hoax strategy on social media, nonprofits inevitably face criticism for such strategies because of the social expectations on nonprofits, expectations that view the nonprofit as having a commitment to better society and use ethical tools to achieve goals. The hoax, however, is a public manipulation that unethically sways public opinion to achieve their goal. Public relations scholars and practitioners agree that "the more successful the campaign is at influencing others, and hence the greater its reach or impact, the more significant the ethical questions become" (Botan, 1997, p.189). As a result, hoaxes might impede democracy, manipulating the public's perception of engaging in civic activities (van der Linden, 2015a). Thus, even though the hoax has an enormous impact on mobilizing online activism, the hoax strategy creates a "legitimacy gap" between nonprofits' mission and their practice (Veil et al., 2015; Heath & Waymer, 2009).

Proposing Concepts of Instant Activism and Instant Public

This study argues that individuals can easily participate in issue advocacy activities with accessible cues for issue processing and connections to social media networks. At the same time, non-profits as activists can incite individuals to engage in vocal and visible supportive actions regarding an issue they advocate, especially in uncertain situations. Non-profits have used tempting cues that motivate lay people to participate in issue processing and online activism. According to previous research, the

non-public can be activated toward certain issues through external stimuli, such as repeated negative stories (Kim et al., 2012). In utilizing this process, non-profits use hoax spreading to increase the number of issue supporters in a short period of time. Nonprofits thus encourage individuals to bypass deliberative consideration of the issue and immediately engage in communication about the issue (See Figure 1).

This study develops terms to describe this process and its resulting audience. The process by which hoax strategy encourages individuals to bypass deliberative consideration and engage in the issue is "instant activism." This study also proposes the concept of "instant publics." Instant publics are hoax inspired activists. This new type of public is based on the discrepancy between the instant public's behavioral activeness in the online communication environment and the absence of embedded principles in their day-to-day life. The instant public serves to further segment types of publics (e.g., active public, aware public, latent public, and non-public), which have been discussed in earlier sections of this study (Hallahan, 1999; Hon, 2001a).

Instant public is defined by this study as a type of public motivated by inflammatory data, findings, event, or reporting, whether true or falsely constructed, to immediate awareness of and active participation against a problem. The instant public's active participation, however, is limited to low-cost communicative actions for issue advocacy. The instant public lacks a set of embedded principles in his or her personal life regarding the issue.

In online activism, generating an instant public has two main benefits. First, generating an instant public accommodates and makes space for a new public willing to

engage, however peripherally, in communication regarding an issue. In this way, activists as campaign leaders can mobilize new, supportive voices or vocal power (e.g. through clicks, comments, likes, and shares) to demonstrate the legitimacy of their activities. Instant publics provide significant data on the impact of an organization's digital presence. Second, the instant public's issue communication can position the issue on the more salient social stage, transforming what might be a low-level advocacy issue into a high-level social problem (i.e., hot-issues) that demands immediate attention and actions. Once a cold-issue becomes a hot-issue, general populations as non-publics not only give attention to the issue, as triggered by media coverage, but become willing to actively engage in issue processing (Chen, Hung-Baesecke, & Kim, 2017). Thus, the two major impacts of instant public generation lead to an interplay that increases public resources to address and potentially solve the problem, thus achieving the activists' overall goal.

The driving force of instant activism is "vocal power" from the instant public's low-cost actions. As describe previously, this differs from traditional engagement by making a donation or attending a rally. Previous research indicates that such vocal publics who are motivated to propagate an issue are not necessarily well-informed, nor do they have objective perspectives (Grunig & Kim, 2017). For example, previous studies suggest that some individuals tend to be highly motivated in their communicative actions because they hold extreme views and are deficient in problem-related knowledge (Krishna, 2016; Kim & Krishna, 2014). This vocal power is not expected to exist in perpetuity. A unit of instant activism (as a one-shot strategy) is a targeted issue (inflammatory data, findings, event, or reporting) within a larger problem. In traditional

activism, leaders aim to mobilize and cultivate publics who consistently engage in social movements (e.g., Kristofferson, White, & Peloza, 2014). Hence, although maximizing vocal power without cultivating sincere principles might be a useful tactic in the short-term, it generates fleeting, hollow support with ethical criticism.

Social media can provide useful environment for non-profits to generate instant vocal power from general or non-active individuals different from consistent supporters. The non-profit, in particular, might be free to use an unethical strategy such as spreading hoax in social media rather than other public spheres as well as traditional online discussion forums. As Valenzuela (2013) notes, social media are free from the norms of neutrality, which dictate ethics for traditional journalistic operations. Furthermore, nonprofits can forage for new voices from non-active publics who are as of yet unaware of certain problems. Websites specializing in public mobilization tend to attract only individuals who already have fixed views regarding the issue (Wojcieszak & Mutz, 2009) or are ready to actively engage in social movements (Park & Choi, 2013). Social media, on the other hand, connects diverse population regardless their political attitude or tendencies (Valenzuela, 2013).

While the appearance of publics without deliberative consideration is not a new phenomenon, the phenomenon has exploded with the growth of online activism, especially as a result of social media campaigns. However, although previous research proposes and examines different types of publics within online communication, there is no research that approaches the phenomenon with a public relations practitioner's

strategic perspective and a comprehensive discussion about why and how the instrumental masses are incited and used as a type of pseudo-public.

As a type of pseudo-activism initiated through social media, instant activism might be comparable to slacktivism. Slacktivists enjoy low-cost, low-effort online activism (e.g., Lee & Hsieh, 2013). Slacktivists sometimes participate in small actions to increase their sense of personal satisfaction apart from an expectation of possible political outcomes (Morozov, 2009). Even though both instant publics and slacktivists maintain similar levels of activism through online communicative actions, this study argues that they are significantly different.

First, in terms of perceived issue involvement as a motivation for activism, the instant public engages in online activism perceiving that an issue is related to them. On the other hand, slacktivists engage in online activism in an effort to follow a large-scale, poular or low-scale, peer-based trend without deep consideration regarding the specific issue (Kristofferson, White, & Peloza, 2014). Thus, slacktivists do not consider themselves an active public but merely want to be seen as an active public by others. This study assumes that instant publics might conceive of themselves as active publics, mentally equating their efforts to traditional activism without considering the situational differences. Essentially, slactivism is generated by the individual who wants to appear to be an activist whereas instant activism is generated by an activist organization that wants to appear to have more support or potentially gain more support.

Second, instant public uses “token action” to generate instant activism. Devalued by slactivism researchers, token action refers to a small act of supports without

substance, such as clicking, commenting, liking, or sharing (Kristofferson, White, & Peloza, 2014). Past research regarding social media activism in relation to slacktivism tends to exclusively focus on the possibility of transmission or evolution of slactivism to consistent, offline activism (e.g., Kristofferson, White, & Peloza, 2014; Lee & Hsieh, 2012; Morozov, 2009), Alternatively, activists and activist organizations take advantage of the ways in which instant activism generates a significant amount of attention in a short period of time. Activists and activist organizations can use token actions to show off their mobilized power.

In addition to the differences between instant activism and slactivism, there are also apt comparisons to be made between instant activism and the "hot-issue public." In considering motivations to become a type of activist public, instant publics can be discussed in terms similar to the hot-issue public. The hot-issue public refers to those who are "active only on a single problem that involves nearly everyone in the population and that has received extensive media coverage" (Grunig, 1997, p. 13). More specifically, they tend to form their own publicity after they are "trigger[ed] by an event" covered by media (e.g., Aldoory & Grunig, 2012; Kim, et al., 2012; Chen, et al., 2017). The hot-issue public is a group of "exogenously" triggered individuals who seek engagement in an issue (Chen, et al., 2017). Instant publics also engage in communications about a single issue, like hot-issue publics (Grunig, 1997; Aldoory & Grunig, 2012).

However, hot-issue publics are "media dependent publics," which are triggered by media coverage after the issue already became a hot-issue. The instant public is generated by other available cues (e.g., hoaxes) even before the issue is known to general

populations, such as current GMO labeling issues. Again, like the comparison to slactivism, instant activism differs from hot-issue activism according to important, nuanced understandings of origin. Aldoory and Grunig (2012) note, however, that a problem can become a hot-issue through digital media, which combines interpersonal and mediated communication, and thus, digital media can help create hot-issue publics. There is a key difference. The hot-issue publics are "more intellectual publics than actively behaving publics" (Grunig, 1997, p. 29). Hot-issue publics are responding to an event, data, or report because, generally, they are peripherally engaged in social problems and seek to be aware, even if superficially, of current events. This study assumes that instant publics perceive themselves to have a high level of involvement with a certain issue and engage in vocal actions promptly, whereas hot-issue publics examine the issue with careful consideration before showing external actions (Grunig, 1997; Kim et al., 2012). Previous research suggests that organizations need to manage the relationship with hot-issue public not only at the time of a crisis to build a short-term relationship but also after the crisis to cultivate a long-term relationship. This is because the research regards the hot-issue public as an aware public, which has the potential to evolve to an active public (Aldoory & Grunig, 2012). The instant public, however, is generated in a disposable, single-purpose public mobilization effort without clear intent to create a long-term relationship or support the instant public's evolution into an active public.

This paper claims that in addition to instant activists, instant activism can generate hot-issue publics and slacktivists. This study suggests that the concept of the instant public provides a framework through which scholars can understand how people

engage behavior in extant issues and how issues become social problems and/or hot-issues. The assumptions of and categorizations developed by scholars have been limited in their ability to present the dynamic interplay between issues and publics. For example, some provide general measures about the likelihood of an individual engaging in information handling behaviors (e.g., Grunig, 1997; Grunig & Hunt, 1984; Kim & Grunig, 2011), while others attempt to explain how issues develop (e.g., Hallahan, 2001).

This chapter compared traditional activism and social media activism in terms of information processing to propose the concepts of instant activism and instant publics. In doing so, the roles of hoaxes were described to illustrate the linkage between these new theoretical concepts and real world situations unfolding in the current social media environment. The following chapter more closely examines the generation of instant publics and explores their communication behaviors, especially in response to uncertain situations, which, for this paper, will include empirical assessments focusing on GMO labeling issues in the U.S.

CHAPTER3: STUDY1. MOTIVATED REASONING IN SCIENCE COMMUNICATION

This chapter investigates how people are instantly motivated to pay attention to an issue and start "cognitive information processing" with motivated reasoning theory.

Motivated Reasoning Theory

According to motivated reasoning theory, people have a desired conclusion with a directional goal when they process information (Kunda, 1990; 1999). In other words, one of the purposes of information processing might be to arrive at the desired conclusion. However, when their ability to rationally arrive at a conclusion is not enough, people construct "seemingly reasonable justifications" assisted by heuristic cues to accept the outcome (Kunda, 1990).

Motivated reasoning is an inherently directed and biased process. In the process of motivated reasoning, people selectively wait for evidence. When people face certain information as evidence, which is consistent with their prior opinions, they consider the evidence stronger, while they disregard information inconsistent with prior beliefs (Taber & Lodge, 2006). In this process, the importance of objective accuracy is dismissed in favor of preserving the individual's belief system (e.g., see Druckman, Peterson, & Slothuus, 2013; Kunda, 1990, 1999; Lodge & Taber, 2000; Slothuus & de Vreese, 2010).

In motivated reasoning, the directed goal might refer to cognitive dissonance reduction. According to cognitive psychology, people feel discomfort when they experience cognitive dissonance, which is the perception of inconsistencies between an

individual's cognitions (Festinger, 1957). The perception of the dissonance motivates the individual to seek and implement a reduction strategy to alleviate the adverse state (Elikin & Leippe, 1985). Thus, recognition of cognitive dissonance can arouse cognitive processing, and at the same time, reduction of dissonance can motivate the processing (Elliot, & Devine, 1994). To facilitate recognition and reduction, people react more favorably to thoughts about their own position and react unfavorably to thoughts about the counter-attitudinal argument (Kunda, 1990).

Although motivated reasoning is a kind of biased processing assisted by favorable or available cues, scholars claim that it also can be a deliberate processing (Kunda, 1990) in considering the dual-processing approach. When people face an issue related to them, they start to look for available information around the issue to the best of their ability. Considering both pros and cons, they list proportionally more issue-related versus issue-unrelated thoughts than did less involved subjects. They also showed some evidence of biased "partisan processing." This pattern of results suggests that directional biases may coexist with elaborate processing.

The focal point of differentiation between motivated reasoning and the previously discussed dual-processing approach (e.g., ELM (Petty & Cacioppo, 1979)) is the role of information processing. In the partisan process of motivated reasoning, high involvement leads to more extensive and deeper processing of their position, which is aligned with ELM. However, unlike ELM, according to the motivated reasoning approach, high involvement does not guarantee analytical processing, which considers all possible arguments, both pros and cons, to achieve a systematic, methodical, and rational

decision (Kunda, 1990). Hence, high involvement serves as a precedent for increasing motivation and encouraging the individual to begin reasoning, even if it is not rational processing.

Chen, Duckworth, and Chaiken (1999) apply a concept of motivation into the previous heuristic-systematic model (Chaiken, 1980), which is one of the dual-processing approaches. They assume that motivation plays two roles based on the level and types in the heuristic-systematic model. First, the level of motivation predicts whether heuristic or systematic forms of cognition will be applied in a given setting/on a given topic. Second, the type of motivation predicts the nature or "direction" of whatever cognition occurs. In other words, when individuals perceive high involvement about an issue, they will be motivated to process the issue, rather than directly move to a central or deliberative information process.

Motivated reasoning has been a useful rationale for addressing controversies regarding science issues, especially when the science issues are politicized (e.g., Kahan et al., 2009; Hart & Nisbet, 2012). As discussed in Chapter 2, individuals tend to take a heuristic processing route or ignore an issue when they do not have enough involvement in motivation to process the issue carefully. The complexity of politicized science issues leads the general population to use motivated reasoning to process these issues. According to previous research, individuals tend to rely on familiar cues to make a decision about science issue for which they are unknowledgeable or illiterate. For example, a two-wave experiment about attitude formation on an innovative technology (Druckman & Bolsen, 2011) suggests that the individual's opinions formed at the first

experiment, in response to exposure to positive or negative frames, strongly conditioned the individual's evaluations of novel scientific information presented in the second experiment. Moreover, people tend to avoid processing scientific issues, which are unfamiliar and difficult to understand. In science-related communication, individuals have little incentive to endeavor to high-level processing of conflicting arguments around technical information (Taber & Lodge, 2006). At this juncture, motivated reasoning coincides with this study's main assumption: people decide whether they will a) participate in the main information processing, which is divided into deliberative processing and cursory processing or b) give up on processing all together.

Concerning GMO labeling issues in the US as a politicized science issue, this study explores to what extent the motivated reasoning theory is applicable in individuals' decision-making process. Thus, the following hypothesis is proposed:

H1: The greater an individual perceives his or her involvement in GMO labeling issues to be, the higher the individual's motivation to process information related to GMO labeling issues will be.

Intellectual Abilities to Be Motivated for Information Processing

Individuals' intellectual abilities to process an issue, such as issue literacy and knowledge, can be regarded as an important variable for determining their level of motivation to engage in issue processing and supportive actions (e.g., Hallahan, 1999; Kim & Grunig, 2011). According to previous research, the uncertainty comes from the likelihood that an event might happen, which forces people to face information not yet

verified as a fact. Some believe in and feel concern about the probability of uncertain events occurring, but others deny the likelihood. As a result of the controversy, lay individuals attempt to process information around the issue to overcome their uncertainty, but the complexity of the issue hinders their ability to calculate all probabilities and consider related risks and benefits rationally (Tversky & Kahneman, 1974). In science communication, scholars agree that laypeople tend to have difficulties in and avoid processing of science-related issues because they lack the issue processing ability (Taber & Lodge, 2006). In the absence of science literacy, people cannot process science issues rationally. For example, Ahern, Connolly-Ahern, and Hoewe (2016) suggest that concerns about climate change and science literacy are positively correlated; the public tends to process the climate change issue with a reliance on heuristic rather than analytic modes of reasoning, which leads them to underestimate climate change risk. In other words, ordinary members of the public fail to understand, reject, or completely ignore the seriousness of climate change because of the complexity of the scientific evidence (Weber & Stern, 2011).

The public's inability to understand can lead to cursory processing, which results in a refusal to accept scientific consensus (e.g., Krishna, 2016) or failure to process scientific consensus, such that the individual ignores the topic entirely (Kahan, 2013). Even if experts' opinions or other scientific information is accessible, individuals do not actively seek out this information to correct their distortions because they lack the time or ability to engage in more effortful knowledge acquisition (Kahan, 2013). Hence,

motivated reasoning assisted by available cues commonly occurs, leading people to avoid thinking seriously or critically (Ahern, Connolly-Ahern, & Hoewe, 2016; Kahan, 2013).

The likelihood of individuals' motivated reasoning informs this study's exploration of the characteristics and roles different intellectual abilities play in motivation to understand and assess GMO labeling issues.

Factual Intellectual Ability: Issue Literacy and Issue Specific Knowledge

According to previous research, the intellectual ability to process scientific issues includes two parts: science literacy and issue knowledge. Science literacy refers to the overall ability of an individual to understand science comprehensively, to know "what scientists know" or think "the way scientist think" (Kahan et al., 2012). Issue knowledge in an individual's ability to accurately acquire the specific information regarding a certain issue (Krishna, 2016).

In terms of GMO labeling issues, this study approaches views intellectual ability as consisting of both a general knowledge of GMOs and issue-specific knowledge of GMO labeling. Issue-specific knowledge of GMO labeling (e.g., how GMO ingredients are indicated on food products, which pros and cons exist with direct and indirect indications, etc.) is crucial to processing the GMO issue. Further, individuals should have general knowledge of GMOs to understand and rationally process GMO labeling issues. GMO labeling issues are a subtopic of GMO use and/or GMO security issues. Thus, this study regards general knowledge of GMOs as "issue literacy."

Perceived Intellectual Ability: Issue Confidence

This study uses the concept of knowledge confidence, which denotes the individual's perceived or subjective level of intellectual ability as a degree of self-evaluation regarding how knowledgeable and literate the individual is about an issue. Thus, it is different from factual or objective ability.

As a subjective perception, even if the issue confidence can be constructed based on the factual knowledge and literacy, the reverse relationship is not guaranteed. The issue confidence can vary separately from the factual issue processing ability. Previous research suggests that expectational referent criteria can play a different role from factual or experiential knowledge (Kim & Krishna, 2014). For example, knowledge confidence can be adjusted not only by an individuals' factual knowledge of scientifically legitimate information but also by their acceptance of non-factual data.

In science issue processing, the knowledge confidence might play a role similar to factual knowledge in increasing issue involvement, as previous psychologists and public relations scholars claimed (e.g., Petti & Cacciopo, 1979; Hallahan, 1999). This is because factual knowledge increases issue involvement and knowledge; it also may construe the level of knowledge confidence. A previous study suggested that a firm, negative attitude due to knowledge deficiencies can lead individuals to participate in social activism. It is a result of "the acceptance (or positive evaluation) of non-factual (scientifically non-legitimate) data," or "the absence of scientifically legitimized knowledge" (Krishna, 2016).

This study assumes that issue knowledge acts as a mediator to increase the level of issue involvement, prompting deliberative thinking or, more broadly, an active public

in traditional information processing models (e.g., ELM) and public segmentation research (e.g., Hallahan, 1999). In the context of the GMO labeling issue, GMO labeling literacy and knowledge are positively associated with a perceived level of issue processing ability—issue confidence. Thus, the following hypotheses are proposed (see Figure 2):

H2: GMO issue literacy (H2a) and GMO labeling issue knowledge (H2b) will increase GMO labeling issue confidence.

H3: GMO labeling issue confidence will increase GMO labeling issue involvement (H3a) and GMO labeling issue processing motivation (H3b)

H4: When mediated by GMO labeling issue confidence, individuals with high level of general knowledge issue on GMOs will a have high GMO labeling issue involvement (H4a) and high motivation to process GMO labeling issues (H4b).

H5: When mediated by GMO labeling issue confidence, individuals with high level of GMO labeling issue-specific knowledge will have high GMO labeling issue involvement (H5a) and high motivation to process GMO labeling issues (H5b).

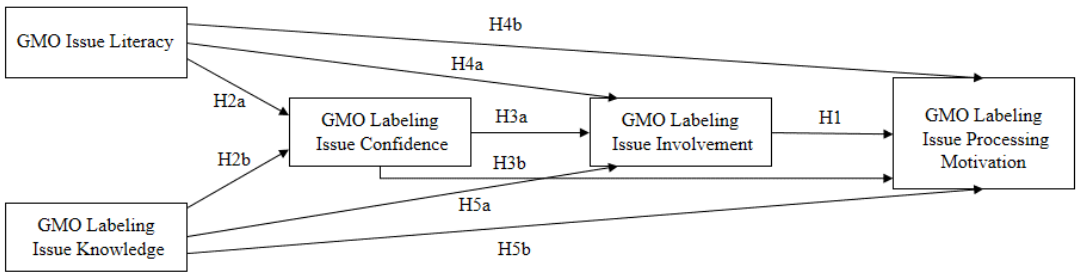

Figure 2. Conceptual Model to Test H1 through H5

Triggers for Motivated Reasoning in Science Communication

As discussed above, issue confidence, which is assumed to increase issue involvement and issue processing motivation, can be increased by both rational and irrational routes. The irrational or heuristic route to be increased issue processing confidence can be incited by external stimuli, which suggest "accessible or available cues" to process the message. Thus, the perceived level of intellectual ability refers to the issue accessibility.

Regarding the reason why lay individuals rely on accessible cues, earlier approaches of science communication research tends to focus on public's knowledge deficiency, which is regarded as a cause of the social uncertainty. The knowledge deficiency of non-scientists arises from not only their ignorance of a difficult science issue but also their disagreement with experts' view, which is so-called scientific consensus (Bauer, Alum, & Miller, 2007). The lack of issue knowledge can be one of causes of public's misunderstanding about the science issue and distrust toward scientific consensus (e.g., Krishna, 2016). Thus, this approach assumes that providing available information regarding the issue can make public more likely to adopt the expert's' view (Hart & Nisbet, 2012).

However, scholars question that abundant information can be a penacana of the social risk due to the public uncertainty. For example, Adoption of genetically modification organisms (GMO) and related technology for food production has long been debated among diverse social actors, such as, scientists, politicians, and social activists, concerning safety matters of GMOs, even though most scientists agree that GMO food

are not detrimental (Kim, Kim, & Besley, 2013; McInerney, Bird, & Nucci, 2004). Nyhan and Reifler (2010) suggest that exposure to factual information failed to correct misperceptions among ideological partisans and in some cases resulted in boomerang effects on beliefs and attitudes and greater ideological polarization. Moreover, current online communication environment allows people to selectively access information which conforms to his or her preferred way of thinking (Kim & Krishna, 2014), rather than openly accept any information. A person who is a high elaboration (central routes) processor tends to think about most or all of the given information. Furthermore, when involvement is high rather than low, people are more motivated to devote the cognitive effort required to evaluate the true merits of an issue (Petty, Cacioppo, & Schumann, 1983)

In this circumstance, recent scholarly works shed lights on several obstacles, which hinder public to do accurate and rational reasoning, rejecting information regarding science issues and experts' perspective, such as, world view (Ahern, Connolly-Ahern, & Hoewe, 2016; Kahan, 2013), emotion (Slovic, 1999), cultural cognition (Kahan, Jenkins-Smith, & Braman, 2011), and motivation (Kim & Paek, 2009).

This study regards that general populations can be easily swayed to make an intended decision through a motivated reasoning process, when they are triggered by certain familiar and tempting cues.

Political Ideology: An Accessible Motivation

Political ideology is a widely applied concept, which is associated with science issue processing. The political ideology has been found to motivate reasoning regarding a

wide range of science issues, including climate change (Ahern, Connolly-Ahern, & Hoewe, 2016), natural disease (Wright & Nerlich, 2006), risks related to food consumption (Hansen, Holm, Frewer, Robinson, & Sande, 2003), and stem cell research (Nisbet, 2005).

Especially, the political ideology has been discussed as a motivation to lead general populations to recognize and take a position on unfamiliar science issues. According to previous research, interests in politics and political identity play to increase involvement recognition and lower constraint recognition, which make people to engage in communicative actions about a politicized science issue (Kim et al., 2012).

In this vein, some previous research assert that the information processing of a science issue in relation to their political disposition is a part of heuristic motivated reasoning (e.g., Lilienfeld et al, 2009; Sunstein, 2006b; Westen et al., 2006). Controversial issues are likely to activate political predispositions and increase issue polarization due to motivated reasoning among general populations (Mutz, 2008). Especially, previous research focus on individuals' political partisanship as a cue for a biased motivated reasoning, which reinforce their political ideology (Kunda, 1990). Hart and Nisbet (2012) suggest that people with strong partisanship tend to interpret messages about a controversial scientific issue, in a way to reinforce their pre-existing beliefs and thus increase political polarization.

GMO labeling law can refer to "science-relevant policy." Thus, when people recognize that the GMO labeling is not only science issue but also political issue, they could change their attitude toward the issue and issue-relevant information processing.

Even though, GMO labeling issues have not yet socially identified as political issues, it might be associated with specific political ideology. If the political aspect of GMO labeling issues become salient among lay individuals, their way of issue processing might be changed and their issue involvement would be increased in relation to their political identity. For example, in the case of climate change, opinions about climate change has become a fundamental identity marker for how Republicans and Democrats politically define themselves and others (Nisbet, 2009). Previous research suggested that strong political partisans has impacts on employing motivated reasoning when exposed to messages about climate change with ideological predispositions moderating information effects on policy attitudes (Hart & Nisbet, 2012).

Thus, regarding GMO labeling issues, making a negative attribution toward certain political identities (e.g., Republicans) can work to arouse opposite side, as well as make engage the political actors' supporters.

H6: Exposure to political ideology associated with GMO labeling issues will increase GMO labeling issue confidence.

H7: Exposure to political ideology associated with GMO labeling issues will increase GMO labeling issue involvement.

H8: Exposure to political ideology associated with GMO labeling issues will increase GMO labeling issue processing motivation.

Spreading Hoax: An Aversive Dissonance Motivation

Arousal may play a role in triggering motivated reasoning. As this study discussed above, in the cognitive process, arousal is crucial for motivated reasoning by giving individuals motivational factors to be involved the process (Kunda, 1990).

When people faced cognitive dissonance, they have motivational arousal to use a cognitive effort to adjust the dissonance (Festinger, 1957). The dissonance makes people feel unconformity, which incites individuals' "aversive feeling." It leads people to seek a cognitive solution, which can persuade themselves and adjust the dissonance. The cognitive adjustment process occurs, even when the issue is not familiar or desired processing (Cooper & Fazio, 1984)

In consideration of radical perspective, the aversive dissonance motivation for issue processing comes from individuals' recognition of the possibility that they can be socially victimized because of lack of issue knowledge (e.g., "If I don't know about it, someone tries to deceive me") (Kunda, 1990). Thus, the arousal from the aversive dissonance serves as a cue to be motivated to aware and know more about the issue with serious consideration.

The aversive dissonance motivation can be discussed in relation to an important dynamic in many science messages, which is the question of who is affected by an identified problem or issue (i.e., who will be a victim or beneficent; Hart & Nisbet, 2012). Message framing by manipulating main players regarding an issue is a common pattern of conspiracy theories when made salient in messages.

In this regard, this study asserts that hoax can motivate individuals to process political cues embedded in a message in a biased manner. Hoax are the deceptive message, which is usually associated with the conspiracy theory (van der Linden, 2015a). When individuals are incited by a hoax, they can recognize that there is something they don't know, and thus, they can start an information process to overcome the cognitive dissonance.

H9: Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue confidence.

H10: Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue involvement.

H11: Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue processing motivation.

Especially, the effect of the hoax can be amplified when it associated with political ideology. Thus, the following hypotheses are proposed to test the interaction effect between exposure a hoax and political ideology.

H12: Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue confidence in interaction with exposure to political ideology.

H13: Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue involvement in interaction with exposure to political ideology.

H14: Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue processing motivation in interaction with exposure to political ideology.

Method

Research Design and Procedures

To test the proposed hypothesis, this study conducted an online experiment via Qualtrics with a 2 x 2 (Political ideology: presence vs. absence and Hoax: presence vs. absence) between-subjects factorial design. The survey link of the Qualtrics was distributed through the MTurk.

Survey participants were recruited through an online panel company, Amazon Mechanical Turk (MTurk), with a cash incentive ($0.8). Current research indicated that Mturk data not only outperforms panel data from professional marketing research companies but also may be considered as a viable alternative to student samples when testing theory-driven outcomes (Kees, Berry, Burton, & Sheehan, 2017). The participants who want to take this study voluntarily sign up on MTurk. Once participants voluntarily signed up, a consent form was presented. Upon agreement to the online experiment, the volunteers were randomly assigned one of four conditions.

This experiment supposed a situation that an individual is accidently exposed to a Facebook content. Thus, before suggesting the main questionnaires, this study asked a screening question to all the volunteers: “Do you use Facebook at least once a week?” Those who answered “yes” could participate in the experiment.

Main questionnaire includes two parts. The first part consists of questions to test the applicability of the motivated reasoning theory to the current GMO labeling issues in

the US and the role of issue confidence in motivating to process the issue. Thus, at the first part, participants were asked to answer the questions on their knowledge, perception, and attitude regarding the GMO labeling issues. To measure participants' general perception, any information about GMO labeling was not provided.

The second part of survey were designed to test the triggering effect of hoax and political ideology in motivating issue processing with experimental priming. Upon subjects completed the first parts of questionnaire, one of four stimuli was shown to each participant with a direction that:

Now, you will see a social media message regarding GMO labeling issues. This message has been posted on Facebook by JustLabelIt, which is a non-profit organization supporting "direct" GMO labeling instead of "indirect" disclosure, such as with a phone number, QR code, or website.

Subjects were asked to complete second parts of questionnaire based on their perception after viewing the message.

Stimuli Development

The stimuli for the second part of the questionnaire were made with a 2 (political ideology: presence vs. absence) x2 (hoax: presence vs. absence) between-subjects factorial design. This study adopts political ideology arousal strategy as a traditional campaign tactic to measure an interaction effect with spreading hoax strategy.

This study manipulated the key variables, which are political ideology and a hoax, by constructing social media messages focusing on the issue of GMO labeling. Stimuli were revised in the context based on existing Facebook campaign messages

posted by JustLabelIt, which is a non-profits advocating change of the new federal law allowing indirect GMO label. Each stimulus includes different messages, images, and descriptions about the flaw of the federal GMO labeling law (see Appendix A).

Political ideology in this study was primed as a republican agenda. Indications of a specific political party were adopted to manipulation previous research to test the effect of political ideology in science communication (e.g., Nisbet, 2005). Specifically, for the political ideology presence condition, a symbol of Republican, which is combined an image of GMO letters was suggested, and Republicans were described as a main player of legislation of the GMO labeling law in the message. On the other hand, the political ideology absence condition presented the image of GMO letters without the symbol of Republican, and a specific main player of the legislation was not suggested.

Hoax strategy was manipulated to divide into a presence condition and an absence condition. This study regards a hoax as "a deceptive message to allude conspiracy theory, which is associated with a group or an individual who are suspected to take advantage of," following previous research regarding hoaxes (e.g., van der Linden, 2015; Veil, Sellnow, & Petrun, 2012; Veil,et al., 2015). To operationalize the definition, this study manipulated the hoax presence condition using a message, which disclose a conspiracy that "GMO labeling is a hoax" and further explanation was suggested regarding how the new GMO labeling law deceive people. The explanation was revised from one of of the JustLabelIt's Facebook post and adopted for this experiment. In the hoax absence condition, neutralized explanation regarding the law was suggested with a notion that the law should be changed.

Manipulation Check

Pretest. Prior to the main test, a pretest was conducted to ensure that the stimuli developed for each experimental condition had the intended effects and generate significant differences between different stimuli. Total 53 volunteered participants were recruited by MTurk with $ 0.2 cash incentive. They are excluded in main test participants recruiting. The answers were measured with 7-point scale.

Manipulations of political ideology context were checked by asking each subject's level of agreement with that "It seems like the Republicans are in favor of the GMO labeling with QR codes." In order to check the manipulation of political ideology, an independent samples T-test was conducted with the two manipulation conditions (presence versus absence). The result showed that participants in the political ideology presence condition ($M = 5.56$, $SD = 1.39$) had a significantly higher score than those in the political ideology absence condition ($M = 3.89$, $SD = 1.34$), $t(49.91) = 4.44$, $p < .001$. Thus, the political ideology manipulation was successful.

In terms of the manipulation of a hoax, another independent samples T-test was conducted with the level of participants' agreement with this sentence: "There is a group of people behind GMO labeling issues, who are trying to purposely mislead the public." The result indicated that participants in the hoax presence condition ($M = 5.41$, $SD = 1.31$) had a significantly higher score than those in the hoax absence condition ($M = 4.57$, $SD = 1.50$), $t(49.49) = 2.14$, $p < .05$. Therefore, the hoax manipulation was also successful.

Main Test. In main test, all subjects were requested to answer two questions for manipulation checks at the end of the experiments. The same manipulation check items and scales were adopted from the pretest.

The result of an independent samples T-test for the manipulation check of political ideology showed that participants in the political ideology presence condition (M = 5.09, SD = 1.63) had a significantly higher score than those in the political ideology absence condition (M = 3.89, SD = 1.37), t = 6.37, $p < .001$. Thus, the political ideology manipulation was successful.

In terms of the manipulation of a hoax, another independent samples T-test was conducted. The result indicated that participants in the hoax presence condition (M = 5.09, SD = 1.49) had a significantly higher score than those in the hoax absence condition (M = 4.51, SD = 1.15), t = 2.77, $p < .01$. Therefore, the hoax manipulation was also successful.

Sample

A total of 246 Facebook users who are in U.S. residential, participated in this survey. The fifteen incomplete responses were removed from the final dataset. The average age of the participants was 34.9 years old, ranging from 18 to 69 (SD =11.75). Of the participants, 55.3% were females and 44.7% were males. Among them, whites or Caucasians were 75.2%, Blacks or Africans were 6.1%, Hispanics or Latinos were 7.7%, Asians were 6.1%, and Native Americans were or others were 4.9%. Most participants (26.4%) had an annual household income of $50,000 - $74,999 ($15,000 - $24,999 (7.3%), $25,000 - $34,999 (16.7%), $35,000 - $49,999 (17.9%), $75,000 - $99,999 (10.2%), $100,000 - $149,999 (4.5%), $150,000 or more (2.8%). A total of 39.8% of the

participants were college graduates, while 35.0% completed some college, but had no degree; 1.2% were less than high school; 2.0% were high school graduates or the equivalent; 8.9% were completed some high school; 2.8% completed a graduate degree; and 10.2% completed some graduate school, but not a degree.

Measurement

Independent variables.

GMO issue literacy was measured by asking the participants general knowledge regarding GMO technology and usage. The items were created. After asking six true/false questions to the participants, the numbers of right answers were used as their GMO issue literacy level. The six questions are "GMO stands for "genetically modified organism (True)," " Genetic modification of food involves the laboratory process of artificially inserting genes into the DNA of food crops or animals (True)," "When you purchase products labeled 100% organic or all natural, ingredients in these products are not allowed to be produced from GMOs (False)," "Canned and processed foods do not contain GMOs (False)," "Produce cannot contain GMOs (False)," "Some plants are made resistant to pests by using a gene from bacteria (True)." The items were first recoded with correct responses codded as 1 and incorrect responses as 0 and then added to form a composite index (M=3.76, SD=1.64).

GMO labeling issue knowledge were measured by asking whether the participants know specific details of the new GMO labeling know, which went into effect in July 2016. This study created five items based on current issues regarding the GMO labeling issues in the US. Participants were requested to answer among "Yes," "Maybe,"

or “No” for five questions, which are “I can explain what the new GMO labeling law is,” “I have heard about the arguments around the new GMO labeling law,” “I know that the federal government has adopted the indirect way of GMO labeling, such as QR codes or ARS,” “I know the difference between the direct ways and the indirect ways for GMO ingredients labeling,” and ”I know how the new federal law is different from a Vermont law on GMO labeling.” True/false questions, which might suggest background knowledge, were not adapted for measuring GMO labeling issue knowledge to eschew a compounding effect for answering following questions (Cronbach's α= .81, *M*=2.64, *SD*=2.67).

Dependent variables.

GMO labeling issue confidence was measured with the participant’s perception about the GMO labeling issues. Four items were adopted after revising previous perceived political knowledge scale (Ran, Yamamoto, & Xu, 2015) for this research context. The participants were requested to indicate their degree of agreement to the following four statements with 7-point Likert scale: “Compared to most people, I know more about GMO labeling issues,” “I am knowledgeable about GMO labeling issues,” “I know a lot about GMO labeling issues,” and “I classify myself as an expert in GMO labeling issues.” The four items were averaged to form an index, with higher scores indicating greater subjective knowledge about the GMO labeling issues (Cronbach's α= 92, *M*=2.64, *SD*=1.43).

GMO labeling issue involvement was measured by asking to what extent to which GMO labeling issues under consideration is of personal importance with 7-point

bipolar scale. Specific bipolar items are adopted from the Personal Involvement Inventory (PII) of Zaichkowsky(1985) as follows: “1: Insignificant – 7: Significant,” “1: Do not matter to me – 7: Do matter to me,” “1: Unimportant – 7: Important,” “1: Of no concern – 7: Of much concern,” “7: Serious – 1: Not serious,” and “1: Irrelevant -7: Relevant” (Cronbach's α=.95 , M=4.33, SD=1.71).

GMO labeling issue processing motivation was measured by adapting Kim and Grunig (2011)’s situational motivation scale. The items were created to measure individuals’ motivation for problem solving with information handling (e.g., information acquisition, selection, and sharing; Kim & Grunig, 2011). This study adopts the items because not only the problem solving actions include a part of information processing (Kim & Grunig, 2011) but also the items include cognitive intentions without behavioral actions. Hence, participants were asked to indicate their degree of agreement to the three statement with 7-point Likert scale: “I am curious about GMO labeling issues,” “I often think about GMO labeling issues,” and “I want to better understand GMO labeling issues” (Cronbach's α=*.82* , M=4.45, SD=1.45).

Control variables.

Internet use, distrust towards politicians, political consumerism, and demographic variables (i.e., age, gender, income, ethnicity and education levels) were measured as control variables. Controlling for variables is important in statistical analysis to observe significant relationship between main variables that researchers intend to study. This treatment reduces the confounding effect of irrelevant variables that are not intended to be studied (Baron & Kenny, 1986).

Internet use has shown to impact on issue confidence to varying degrees (Ran, Yamamoto, & Xu, 2015). Internet use was measured with two sub-categories: overall internet use and social media active use. **Overall internet use** was measured by asking "How much do you use the internet on a typical day?" with 7-point scale (1: Never – 7: more than 10 time a day) *(M* = 5.48, *SD* = 1.50). **Social media active use** was measured by asking "in the past month on social media sites, how often do you use it for the following activities?" with 7-point scale (1: Never – 7: more than 10 time a week): "Posting personal experiences or thoughts," "Liking/loving/reacting to a post," "Replying/commenting to others' post/tweets," and "Sharing or retweeting others' post" (Cronbach's α=.87, *M*=3.81, *SD*=1.47).

Previous research showed that pre-existing attitude toward an involved actor of an issue tends to make individuals to do biased reasoning regarding the issue (e.g., Lodge & Taber, 2000). In this regard, the participations' general attitude toward politicians and corporations were analyzed.

Distrust towards politicians was measured by asking participants' negative attitudes toward politicians, adopting previous research (MacKenzie & Lutz, 1989), with three 7-point bipolar items, which are "1: Good - 7: Bad," "1: Pleasant- 7: Unpleasant" and "1: Favorable – 7: Unfavorable" (Cronbach's α=.91, *M*=4.71, *SD*=1.34).

Political consumerism was measured by asking each subject's life-style politics as a consumer. The items were modified from Stolle, Hooghe, and Micheletti (2005). Participants were asked to indicate how agree or disagree with these four statements with 7-point Likert scale: **"**I think it is a good thing when brands get involved with political

issues," "Brands (corporations) should support political issues that reflect their values," "I would personally support a brand or company more if they supported a political issue I support," and "I would boycott a brand or company if they supported a political issue I oppose." (Cronbach's α=.83, M=3.73, SD=1.32).

Result

Path analysis techniques were used to examine the direct and indirect paths from *GMO issue literacy* and *GMO labeling issue knowledge* to G*MO labeling issue processing motivation through GMO labeling issue confidence* and *GMO labeling issue involvement* to shed light on the tenability of this study's causal models and to test the first set of hypotheses (H1-H6).

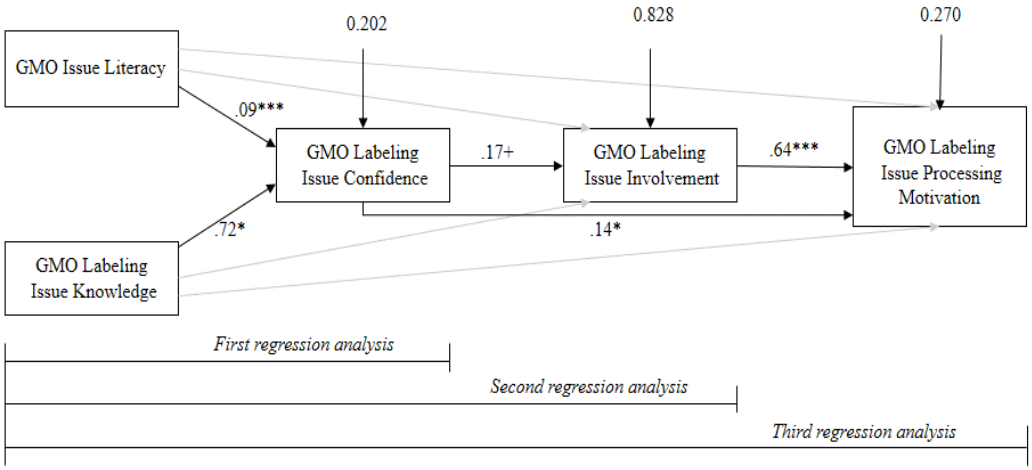

Figure 3. Results of Path Analyses for H1 through H5
Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

Table 1 Results of Path Analyses for H1 through H5

	Direct Effects	Indirect Effects	Total Effects
First regression analysis	R^2=.55 *F*=145.51		
(DV: GMO labeling issue confidence)	*p* < .001		
GMO Issue Literacy	.72***	0	.72***
GMO Labeling Issue Knowledge	.09*	0	.09*
Second regression analysis			
(DV: GMO labeling issue involvement	R^2=.09 *F*=8.16 *p* < .001		
GMO Issue Literacy	0.12	0.02†	0.02†
GMO Labeling Issue Knowledge	0.09	0.12†	0.12†
GMO Labeling Issue Confidence	.17†	0	.17†
Third regression analysis	R^2=.48 *F*=.56.57		
(DV: GMO labeling issue processing motivation)	*p* <.001		
GMO Issue Literacy	-0.05	.02*	.02*
GMO Labeling Issue Knowledge	0.03	.18*	.18*
GMO Labeling Issue Confidence	.14*	0.11†	.25†
GMO Labeling Issue Involvement	.64***	0	.64***

Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

To obtain the path coefficients, three regression analyses were conducted. The first regression analysis employed GMO issue literacy and GMO labeling issue knowledge to GMO labeling issue confidence as the first dependent variable. GMO labeling issue involvement was the dependent variable for the second regression analysis. The third regression analysis had GMO labeling issue processing motivation as the final dependent variable. The path coefficients are shown in Figure3 and Table 1.

Hypothesis 1 stated that the more perceives involvement about GMO labeling issues, the higher individuals' motivation to process information related to GMO labeling issues. As indicated in Table 1 and Figure 1, GMO labeling issue involvement had statistically significant direct effect to GMO labeling issue processing motivation (β = .64, p <.001). Therefore, H1 was supported.

Hypothesis 2 expected that a) GMO issue literacy and b) GMO labeling issue knowledge have impact on increasing GMO labeling issue confidence. The results suggested that there were statistically significant direct effect between GMO issue literacy and GMO labeling issue confidence ($\beta = .72$, $p < .001$), and GMO labeling issue knowledge and GMO labeling issue confidence ($\beta = .09$, $p < .05$). Thus, H2a and H2b were supported (see Figure 3 and Table 1).

Hypothesis 3 predicted GMO labeling issue's positive associations with GMO labeling issue involvement (H3a) and GMO labeling issue processing motivation (H3b). According to the results (see Table 1 and Figure 3), GMO labeling issue confidence was not directly related to GMO labeling issue involvement. However, GMO labeling issue confidence and GMO labeling issue processing motivation had direct ($\beta = .14$, $p < .05$). Thus, Hypothesis 3a was not supported, but Hypothesis 3b was supported.

Hypothesis 4 expected that individuals with high level of general knowledge issue on GMOs have a) high GMO labeling issue involvement and b) high motivation to process GMO labeling issues, when mediated by GMO labeling issue confidence. As seen in Figure 1 and Table 1, there was no statistically effect between GMO issue literacy and GMO labeling issue involvement, even when they were mediated by GMO labeling issue confidence. However, the results also suggested the statistically significant indirect effect between GMO issue literacy and GMO labeling issue processing motivation mediated by GMO labeling issue confidence ($\beta = .02$, $p <. 05$). while, their direct effect was not statistically significant. Thus, Hypothesis 4a was not supported, but Hypothesis 4b was supported.

Table 2 Regression of the Effect of Hoax Strategy on Issue Confidence, Issue Involvement, and Issue Processing
Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

	GMO Labeling Issue Confidence β (*t* statistic)	GMO Labeling Issue Involvement β (*t* statistic)	GMO Labeling Issue Processing Motivation β (*t* statistic)
Demographic variables			
Age	-08(-1.30)	.13(1.99)*	.17(2.60)***
Gender (Male = high)	-.02(-.31)	-.18(-2.72)**	-.18(-2.81)**
Race (White = high)	-.06(-.96)	-.07(-1.18)	-.07(-1.18)
Income	-.07(-1.11)	.05(.74)	.02(.29)
Education	-.06(-.99)	-.01(-.21)	-.01(-.11)
Internet use			
Overall internet use	.03(.59)	.02(.30)	.06(.95)
Social media active use	.11(1.87)†	.10(1.50)	.17(2.70)**
Political attitude			
Political conservatism	.05(.78)	.08(1.23)	.01(.19)
Distrust toward politicians	-.05(-.80)	-.01(-.18)	.04(.55)
Political consumerism	-.14(-2.39)*	-.22(-3.59)***	-.24(-4.02)***
Previous issue knowledge			
GMO issue literacy	.06(1.09)	.06(.99)	.02(.33)
GMO labeling issue knowledge	.45(7.43)***	.23(3.43)**	.20(3.13)**
Exposure to stimuli			
Political ideology	.12(.71)	.15(.79)	.18(.95)
Hoax	.21(1.19)	.24(1.27)	.39(2.14)*
Political ideology X Hoax	-.21(-.91)	-.24(-.95)	-.37(-1.48)
Adj. R^2	.27	.13	.18
F(15, 230)	7.10***	3.35***	4.581***

Hypothesis 5 posited the mediating effect of GMO labeling issue confidence, between GMO labeling issue specific knowledge and GMO labeling issue involvement (H5a), and motivation to process GMO labeling issues (H5b). Based on the results, Figure 1 and Table 1 showed that the relationship between GMO labeling issue specific knowledge and GMO labeling issue involvement was not statistically significant, even

when they were mediated by GMO labeling issue confidence. However, the result indicated that the indirect effect between GMO labeling issue specific knowledge and GMO labeling issue processing motivation mediated by GMO labeling issue confidence was also statistically significant (β = .18, p < .05), while their direct effect was not statistically significant. Thus, Hypothesis 5a was not supported, but Hypothesis 5b was supported.

To test Hypothesis 6 – 14, which examined the influence of hoax strategies to change individual's willingness for issue processing, hierarchical linear regression models were designed and examined with three different dependent variables (i.e., GMO labeling issue confidence, GMO labeling issue involvement, and GMO labeling issue processing motivation). The each regression analysis employed the following three blocks of independent variables entered in this order: block 1: demographics (age, gender, race, income, education); block 2: internet use (overall internet use, social media active use), political attitude (political conservatism, distrust to politicians, and consumer politicism), and previous issue knowledge (GMO issue literacy and GMO labeling issue knowledge); block 3: Exposure to stimuli (political ideology, hoax and interaction effect (political ideology x Hoax)). The coefficients of block 3 are suggested in Table 2.

Hypothesis 6,7, and 8 expected the interaction effect between political ideology associated with GMO labeling issues and GMO labeling issue confidence (H6), GMO labeling issue involvement (H7), and GMO labeling issue processing motivation (H8). The result indicated that there was no statistically significant effect of exposure to political ideology associated with GMO labeling issues to change GMO labeling issue

confidence, GMO labeling issue involvement, and GMO labeling issue processing motivation. (see Table 3). Therefore, Hypothesis 6, Hypothesis 7, and Hypothesis 8 are not supported.

Hypothesis 9,10, and 11 claimed that exposure to hoax regarding GMO labeling issue has positive associations with GMO labeling issue confidence (H9), GMO labeling issue involvement (H10), and GMO labeling issue processing motivation (H11). As seen Table 3, exposure to a hoax regarding GMO labeling issues had no statistically significant effect to change the GMO labeling issue confidence and the GMO labeling issue involvement. Therefore, Hypothesis 9 and Hypothesis 10 were not supported. However, the results indicated that hoax has statistically significant expectation power to increase GMO labeling issue processing motivation ($\beta = .39$, $p < .05$). Thus, Hypothesis 11 was statistically supported.

Hypothesis 12, 13, and 14 stated that exposure to hoax regarding GMO labeling issues increase GMO labeling issue confidence (H12), GMO labeling issue involvement (H13), and GMO labeling issue processing motivation (H14) in interaction with exposure to political ideology. However, according to the results, there were no statistically significant interaction effect of exposure to political ideology and hoax regarding GMO labeling issues to change GMO labeling issue confidence, GMO labeling issue involvement, and GMO labeling issue processing motivation. Therefore, Hypothesis 12, Hypothesis 13, and Hypothesis 14 were not supported.

Discussion

With an online experiment, Study 1 indicated that information processing of a politicized science issue would be through subjective path mediated by individuals' issue confidence. The data stated that factual intellectual abilities regarding an issue (i.e., factual knowledge, issue literacy) have no direct impact to increase the issue processing motivation, unlike they can increase the motivation mediated by issue confidence.

This study created a concept of "issue confidence" as a perceived intellectual ability. If the ability, which has impact on motivating to process information, is a perceptual variable, rather than factual concept, it may be manipulated and changed by a hoax. Thus, people can evaluate themselves as a knowledgeable person to engage the issue. The result suggested a different approach from previous research, which focused on factual intellectual abilities, such as issue literacy or knowledge, assuming that it can be associated with engaging in issue processing and social movement. With this regards, hoax strategy without factual information, cannot be regarded to have a power to motivate people.

Results showed that the issue confidence cannot change issue involvement. Previous research posits issue knowledge and issue involvement in the same level but different dimensions (e.g., Hallahan, 2001a). The result stated that although the issue confidence plays as a perceptual factor, which is different from factual knowledge, it cannot be posited in different level from issue involvement, which can be a cause to change.

The results indicated that social media hoax has a unique impact on promoting individuals' motivation different from political ideology as one of the possible extraneous stimuli. Thus, when people are exposed to a hoax related an issue, they may instantly have motivated to be engaged in the issue processing.

However, the hoax strategy did not change issue confidence and issue involvement. Even though, the results did not support the original hypotheses, it is more plausible to understand the characteristics of a hoax. This is because the results indicated that the hoax strategy accelerates people to be motivated to process an issue by jumping deliberative process with assessing issue knowledge and issue involvement.

Table 3. Table Summary of Hypotheses Test Results of Study 1

	Hypotheses	Results
Hypothesis 1	The greater an individual perceives his or her involvement in GMO labeling issues to be, the higher the individual's motivation to process information related to GMO labeling issues will be.	Supported
Hypothesis 2a	GMO issue literacy will increase GMO labeling issue confidence.	Supported
Hypothesis 2b	GMO labeling issue knowledge will increase GMO labeling issue confidence.	Supported
Hypothesis 3a	GMO labeling issue confidence will increase GMO labeling issue involvement.	Not Supported
Hypothesis 3b	GMO labeling issue confidence will increase GMO labeling issue processing motivation.	Supported
Hypothesis 4a	When mediated by GMO labeling issue confidence, individuals with high level of general knowledge issue on GMOs will have a high GMO labeling issue involvement.	Supported
Hypothesis 4b	When mediated by GMO labeling issue confidence, individuals with high level of general knowledge issue on GMOs will have a high motivation to process GMO labeling issues.	Not Supported
Hypothesis 5a	When mediated by GMO labeling issue confidence, individuals with high level of GMO labeling issue-specific knowledge will have high GMO labeling issue involvement.	Supported
Hypothesis 5b	When mediated by GMO labeling issue confidence, individuals with high level of GMO labeling issue-	Not Supported

	specific knowledge will have high motivation to process GMO labeling issues.	
Hypothesis 6	Exposure to political ideology associated with GMO labeling issues will increase GMO labeling issue confidence.	Not Supported
Hypothesis 7	Exposure to political ideology associated with GMO labeling issues will increase GMO labeling issue involvement.	Not Supported
Hypothesis 8	Exposure to political ideology associated with GMO labeling issues will increase GMO labeling issue processing motivation.	Not Supported
Hypothesis 9	Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue confidence.	Not Supported
Hypothesis 10	Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue involvement.	Not Supported
Hypothesis 11	Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue processing motivation.	Supported
Hypothesis 12	Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue confidence in interaction with exposure to political ideology.	Not Supported
Hypothesis 13	Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue involvement in interaction with exposure to political ideology.	Not Supported
Hypothesis 14	Exposure to hoax regarding GMO labeling issues will increase GMO labeling issue processing motivation in interaction with exposure to political ideology.	Not Supported

CHAPTER4. STUDY2: UNDERSTANDING OF COMMUNICATIVE ACTIONS

The previous chapter (Study 1) examined how individuals are triggered and motivated to cognitively process an unfamiliar issue. This chapter (Study 2) will address how individuals are instantly engaged in issue related "behavior" using situational theory of problem solving and the concept of communicative action for problem solving.

In doing so, the Study 2 is expected to suggest behavioral characteristics of instant publics, followed by the Study 1, which presented how the instant activism works in individuals' cognitive process.

Situational Theory of Problem

The situational theory of problem solving (STOPS) explains how and why individuals are motivated (i.e., become active in addressing a certain problem) to engage in issue-related communicative actions and further explains the characteristics of public behavior (Grunig & Kim, 2017; Kim & Grunig, 2011; Krishna, 2016). This theory considers an issue as a problem, which has a perceptional gap between a present state and the desired state (Kim & Grunig, 2011). When individuals face an uncertain situation that generates feelings of discomfort or even pain, they recognize the situation as a problem. In this vein, STOPS addresses the role of recognition in that problematic situation, which makes people assess how they can solve the problem (Kim & Grunig, 2011). The theory also suggests a relationship between problem solving and communicative action. When people enter into a problematic situation, they try to understand the causes and the conditions of the situation and behave in ways that allow them to deal with the problematic state and resolve its consequences (Grunig & Kim, 2017). In this regard, the

theory attempts to explain communicative actions, which are driven by problem solving. Thus, information behaviors are triggered and motivated by conscious problem recognition (Kim & Gruning, 2011).

In applying STOPS, this study examines how non-profits' hoax-spreading strategy in social media (i.e., instant activism) provokes lay individuals' prompt recognition of and behavioral change in support of (i.e., generating instant publics) the advocacy issue. STOPS originated in Grunig's previous theory (i.e., situational theory of publics), which measures the likelihood that an individual will actively participate in information processing in response to an issue (Grunig, 1997; Markham & Grunig, 1969). The situational theory of publics has been considered a useful approach in evaluating the effectiveness of public relations campaigns (Aldoory & Van Dyke, 2006; Vaderman & Aldoory, 2008). Narrowing the focus, STOPS articulated the relationship between issue awareness and problem solving engagement, suggesting measurable variables for data collection and statistical analysis (Kim, Ni, Kim & Kim, 2012). Therefore, this study uses STOPS to address the processing of instant activism and to determine the behavioral characteristics of instant publics.

In developing the concepts of instant activism and the instant public, this study considers the processes and consequences of problem solving differently than the original perspective of STOPS. As discussed in Chapter 2, instant activism incites lay individuals to pay attention to and participate in intentionally vocal behavior without deliberative consideration. Instant activism generates the instant public, who engages in vocal supportive actions. As an extension of Grunig's public research, which regards

individuals as rational and active persons (e.g., Grunig, 1966; 1997), STOPS assumes that each problem-solving communicator is "highly motivated and active in thinking and acting" about their problems (Kim & Gruning, 2011, p.145). By definition, the instant public does not act according to Grunig's description of the problem-solving communicator. Using this divergence, this study compares the differences between the instant public and the active public by examining how instant activism works within STOPS.

Information Processing for Problem Solving

In Chapter 2, this study discussed the importance of the individual's decision-making around the initial interpretation of information and messages related to an issue—the pre-information processing stage. In the following, the study introduced the limitations of the dual processing approach. The dual processing approach includes a *deliberative route* with a considerable assessment of information and a *cursory route* with a limited assessment of information.

This study found that STOPS has a more comprehensive approach to the information processing of a problem. STOPS considers both whether to and how to process an issue. Initially, according to Kim and Grunig (2011), individuals' information behaviors are a consequence of situational assessments triggered by conscious problem recognition, which drives problem solving. Moreover, STOPS accepts both considerations deliberative processing and heuristic processing. Grunig's approach to explaining public behavior in problem solving assumes that the public is an active participant in determining whether or not to solve a problem (Grunig & Kim, 2017). At

the same time, grounded in the heuristic-systematic processing model (Chaiken, 1980), STOPS suggests the likelihood that individuals decide to engage in problem solving actions and handle information depending on their heuristics (Kim & Grunig, 2011). This study designates the two possible routes of STOPS as the "deliberatively motivated path" and the "confidential shortcut." STOPS suggests two cognitive ways that individuals present communicative actions: 1) mediated by problem solving motivation and 2) dependent on a cognitive schema, also known as the referent criterion. While two possible routes connect to communicative actions in STOPS, the two routes can be activated simultaneously rather than strictly individually. Further, even if an individual participates in a communicative coping action on a problem, as a result of deliberative processing, they might engage in the actions applying heuristic methods (see Figure 4).

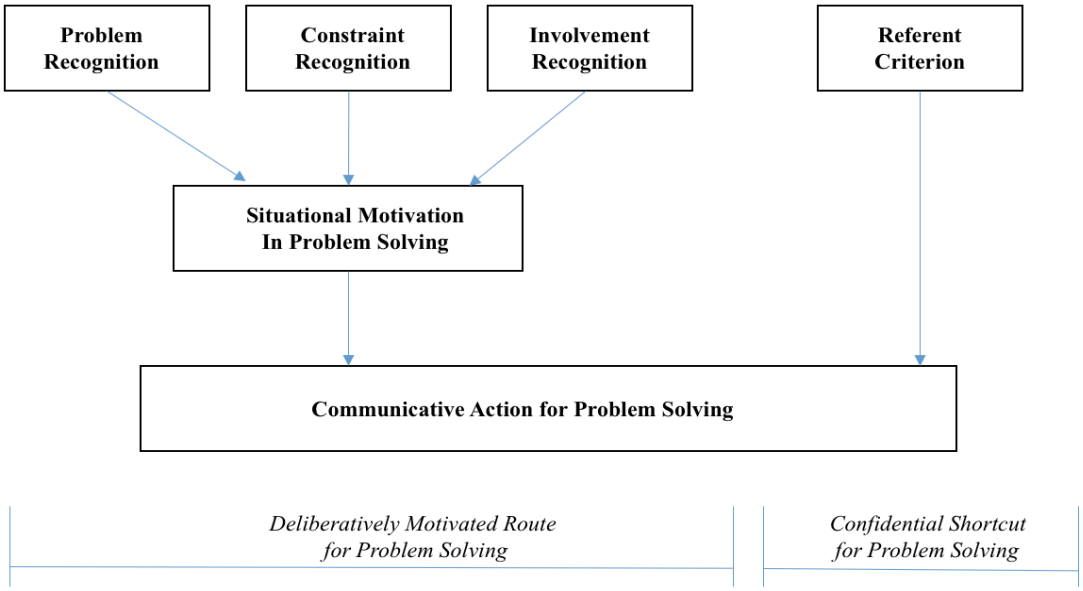

Figure 4. Conceptual Model of Situational Theory of Problem Solving

In the following section, this study will introduce how STOPS suggests two different problem-processing routes and describe how instant activism might simultaneously activate two different routes.

Deliberatively Motivated Route for Problem Solving

STOPS suggested a route of problem solving that is mediated by situational motivation in problem solving. In this route, individuals deliberatively assess their situation around the problem. In other words, when individuals recognize and seriously consider an existing issue as a problem (i.e., problem recognition), they: 1) develop a high regard for their involvement regarding in the problem (i.e., involvement recognition), 2) ignore constraints for solving the problem (i.e., constraint recognition), and 3) activate a high level of situational motivation in problem solving (Kim & Grunig, 2011). In this study, the deliberatively motivated route for problem solving refers to a central route mediated by a situation-specific motivation. The situational theory of problem solving suggests that situational conditions lead individuals to have situational motivations to problem solving.

According to STOPS, situational motivation, "an immediate antecedent of communicative action," is the key concept in leading an individual through the gate of problem solving (Kim & Grunig, 2011, p. 141). Kim and Grunig (2011) describe situational motivation as the driving force as "a person stops to think about, is curious about, or wants more understanding of a problem (p.16)." Situational motivation in problem solving depends on perceptual and cognitive recognitions of the problem. It is also distinguishable from previous approaches to public research (i.e., Situational theory

of publics; Grunig, 1997)). Scholars have concluded that the individual stops "to think about it" at the same time that they recognize that there is a problem (Grunig & Kim, 2017; Grunig, 1997). Situational motivation in problem solving represents the extent to which a person is willing to learn and think more about a given problem as a consequence of recognizing a problematic situation, finding a close connection to his or her own interests, and/or anticipating minimal constraints in solving the problem (Kim, Ni, Kim & Kim, 2012).

Problem recognition can be regarded as the first step of problem solving and depends upon individual experience and background. When an individual recognizes that "it is a problem," they begin to consider whether or not they should solve the problem (Kim & Grunig, 2011). A problem has an uncomfortable discrepancy between an expectation and an observation (i.e., a perceptual problem or problem) but there is no direct solution to correct the difference (i.e., a cognitive problem or meta problem). This step is not based on human instinctive sense, but intellectual cognitive process through comparisons between the situation and personal opinions, knowledge, and beliefs (Kim et al., 2012). For example, in terms of GMO labeling issues, a typical non-GMO consumer would be more likely to recognize that it is inconvenient to scan every food item to determine whether or not the item contains GMOs when they shop as opposed to indifferent consumers who have no opinions, knowledge, or beliefs about GMO consumption. Thus, while these two people could be exposed to the same situation at the same time, only the individual with the relevant opinions, knowledge, and beliefs can detect a problem.

The involvement recognition variable considers different personal situations in detecting a problem and making a decision about whether or not to pursue further cognitive and behavioral actions in response to the problem. It is undeniable that the more an individual recognizes personal issue involvement in the problem, the more engagement will be occur in seeking to solve the problem. However, recognizing personal involvement is not a process, which is objectively decided and measured. Individuals differently perceive how they are "connected" to a certain situation depending on the given situation and their personal background (Grunig, 1997). Rather than asserting that involvement affect perception, Kim and Grunig (2011) argue that involvement is a perception itself. In this vein, this study assumes that involvement can be a varied perception according to how an issue is constructed or framed as an extraneous trigger.

Constraint recognition negatively moderates engagement in problem solving behaviors. Constraint recognition occurs when "people perceive that there are obstacles in a situation that limit their ability to do anything about the situation" (Grunig, 1997, p. 10). This approach assumes that people expect self-efficacy when they engage in problem solving in consideration of the cost-effectiveness of their behavior. Thus, people tend to engage when they judge that the solution to the problem requires limited effort and easy action (Grunig, 1971). Constraint recognition depends on situational changes. In the case of GMOs, social media reduces the perceived constraints to participation in activism by providing options for simple, expedient actions, such as sharing, liking, or commenting

(See Chapter 2). People tend to click to express their support of an issue on social media, even if they would not participate in a march or rally in person (Lee & Hsieh, 2013).

The rational and deliberative mental process of deciding whether or not to initiate communication to solve the problem begins when situational motivation is increased and activated by the three conditions (i.e., problem recognition, involvement recognition, and constraint recognition). The original approach to the theory tends to strengthen the importance of this autonomous process. Grunig and Kim's recent work indicates that in the STOPS approach, publics create themselves as a result of their perceptions of problems and "publics generally are not created by messages or campaigns" (Grunig & Kim, 2017, p.21).

This study adopts a different research approach, finding that an individual's deliberative cognitive process can be altered by extraneous triggering (Aldoory & Grunig, 2012; Kim, Kim, Ni & Kim, 2012; Chen, Hung-Baesecke, & Kim, 2016). For example, previous research suggests that prolonged media coverage can trigger awareness and intellectual processing in the general population, even though popular attention would have declined as media attention declined (Aldoory & Grunig, 2009; Grunig, 1997). Previous research suggests that some individuals (e.g., hot-issue public) can quickly become engaged as a result of exposure to media coverage, especially if the event/problem/coverage involves scandals or national problems (Grunig, 1997). Furthermore, when "a controversial triggering issue occurs" (Grunig & Kim, 2017), party and political identity, like other forms of identity, can produce and/or exacerbate

differences in the activeness of publics (Chen, Hung-Baesecke, & Kim, 2016; Kim et al., 2012)

Moving from media coverage generally to problems as they are presented on social media, social media hoaxes certainly emerge as "controversial triggering issues," but the processes and methods are different. This begs the question, how does the social media hoax promote and motivate publics to initiate problem solving actions following the deliberatively motivated route? This study substitutes the social media hoax as the extraneous trigger to motivate and promote individuals to initiate the cognitive processes for taking problem-solving actions. Thus, the hypotheses are proposed:

H1: Exposure to a hoax will increase problem recognition

H2: Exposure to a hoax will decrease constraint recognition

H3: Exposure to a hoax will increase involvement recognition

H4: Exposure to a hoax will increase situational motivation.

Confidential Shortcut for Problem Solving

When solving a problem, people tend to recall personal memory (i.e., a referent, a cognitive schema, categories or a cross-situational attitude) of similar problem solving experiences especially when they were succeeded (Kim & Grunig, 2011). Confidential shortcut for problem solving is influenced by individual problem solvers' knowledge or subjective judgmental system, which is referenced to as *referent criterion*.(i.e., Cognitive schema variable) It can include decisional guidelines or decision rules (retrievable solutions or pieces of knowledge for constructing a new solution) perceived as relevant to a given problem (Kim & Grunig, 2011). Thus, when individuals have direct or indirect

experience in relation to a certain issue or problem, they jump into problem solving behaviors through a shortcut without its process of being motivated by regulating.

A referent criterion is a cognitive part, which connect available and applicable knowledge from individuals' memory (Higgins, 1996; Grunig, 1997). In terms of referent criterion in issue processing, this study sheds light on the role as a shortcut in two ways, which provokes individuals' behaviors (communicative actions) by allowing them to jump to deliberative cognitive processing mediated by situational motivation. STOPS suggests two possible ways to prime the referent criterion to engage in problem solving behaviors.

First of all, prior problematic situations and experiences can suggest a recyclable and workable referent criterion as a factual solution. With this objective type referent criterion (Kim et al., 2012), individuals solve the problem through systematic but economically heuristic approach in aims to find optimal outcomes (Krishna, 2016). In this way, individuals might less perceive needs for new information seeking. Rather, individuals might depend on previous knowledge and actively select and transmit "fitting information" with the knowledge (Kim et al., 2012).

Another way for priming the referent criterion is to be improvised from "a piece of knowledge for constructing a new solution" (Kim & Grunig, 2011, p.131). With this subjective approach, individuals engage in problem solving actions to fulfill their pre-existing desire or preferences. As a result, individuals find and share information that fits his or her preferred way of thinking or problem solving in less optimal problem outcomes (Krishna, 2016). In applying this way, individual problem solvers need to search more

information to make up new conclusion as well as chose and give (Kim et al., 2012). The two types of referent criterion suggest that how much or strong referent criteria individuals have can lead to higher communicative action in problem solving (Kim & Grunig, 2011).

Engagements in problem solving process with a presence of an accessible referent criterion can guide individuals to take a shortcut for decision making. When the individuals depend on as a knowledge action (Higgings, 1996, Kim & Grunig, 2011). As discussed in Chapter 2 and 3, people accept messages and contents of hoax as an accessible knowledge. Thus, this study assumes that exposure to a hoax can increase individuals' referent criterion to start communicative action.

H5: Exposure to a hoax will increase the referent criterion

Communicative Actions in Problem Solving

When reference criteria motivates or activates individuals to engage in the problem, they participate in a "purposive coping behavior" aimed at problem resolution (Grunig & Kim, 2017, p.13). STOPS explains these coping behaviors with the concept of communicative action to understand how actively individuals engage in problem solving.

Communication can be regarded as an instrumental tool for problem solving, increasing communicators' perceptions and motivations in relation to a certain issue (Kim et al., 2012). According to the situational theory of problem solving, individuals' communicative actions to solve a problem are address through the information handling process. The information handling process has three stages: information acquisition, selection, and transmission (Kim et al., 2007; Kim & Grunig, 2011). In the *information*

acquisition stage, as a first, active step in problem solving, individuals as problem solvers perform targeted research inquiries and absorb peripheral information (i.e., *information seeking*) or obtain accessible information (i.e., *information attending*). In the next stage, *information selection*, a cognitive information processing stage, problem solvers openly accept any information (i.e., *information permitting*) or discern useful from useless information (i.e., *information forefending*) based on a pre-constructed cognitive heuristic system. In *information transmission*, an inter-personal communication stage, individuals give useful information or ideas to others voluntarily (i.e., *information sharing*) or by request (i.e., *information forwarding*). The original definitions of the six communicative actions in problem solving are stated in Table 4.

Table 4. The original definitions of communicate actions in problem solving (Kim & Grunig, 2011, pp 124-127.)

Communicative Actions in Problem Solving	Definition
Information seeking	"The planned scanning of the environment for messages about a specified topic (Grunig, 1997, p.9)"
Information Attending	"Unplanned discovery of a message followed by continued processing of it."
Information Forefending	"A communicator fends off certain information in advance by judging its value and relevance for a given problem-solving task."
Information Permitting	"The extent to which a communicator accepts any information related to a problem-solving task."
Information Forwarding	"Proactive information giving, even if no one solicited it - a planned, self-propelled information giving to others."
Information Sharing	"Passive information giving, which is appeared only when someone requests one's opinion, idea, or expertise about the problem."

This study adopts the concept of communicative action and the six specific information handling stages to suggest that the instant publics' behavioral characteristics differ from the traditional active publics' behaviors. This difference is assumed and then empirically explained by previous STOPS literature. In doing so, this study explores the types of communicative actions in which instant publics engage.

Relationships between Proactive Actions and Reactive Actions in Segmenting the Instant Public

The six communicative behaviors of STOPS identify proactive actions as *active* information behaviors and reactive actions as *passive* information behaviors. These two types of communicative actions, which are determined by the communicator's willingness and intention, set up a theoretical basis for to exploring the characteristics of the public's information behaviors.

Proactive actions include information seeking, forefending, and forwarding behaviors (Kim & Grunig, 2011; Krishina, 2016). In the proactive information handling process, individuals actively gather information (*seeking*), actively avoid or reject a source of information as a result of developing information preference (*forefending*), and forward information without being prompted or asked (*forwarding*). Proactive communicative actions can be described not only active but also planned, motivational, or self-propelled behaviors (Moon, Rhee, & Yang, 2016).

In reactive information processing, individuals serendipitously receive information (*attending*), delay the active rejection of information due to a diffidence to accept (*permitting*), and share information about the issue only when asked (*sharing*).

Thus, information attending, permitting, and sharing are covered by reactive actions in the situational theory of problem solving (Kim & Grunig, 2011; Krishina, 2016).

The segmentation of communicative actions into active and passive clarifies the characteristics of publics. According to the original approach, individuals as problem solvers can be segmented into two categories: active individuals and passive individuals. Kim and Grunig (2011) use the term *evolving* to describe the process by which passive individuals become active individuals. This is because "as one becomes a more active problem solver, one's information selectivity *evolves* from unsystematic to systematic, from general to specific and from related to relevant" (p.127). Thus, the theory suggests that active individuals maintain a high level in all information behaviors, while passive individuals maintain a high level only in reactive and passive information behaviors. Active individuals, as an active public, strengthen their activeness from a passive level of communicative action as a passive individuals or awareness/latent publics. For example, Kim and Grunig (2011) argue that individuals who attend information start to actively seek information when they perceive a certain issue to be more problematic. In a similar vein, other research on publics states that a public evolves from the process of communication, through actions such as discussion (Hallahan, 2001; Jones, 2002). Thus, public evolution has been regarded as a gradual, progressive, step-by-step process.

Through this process of evolution, publics engage in deliberative activism and issues activation. Scholars have argued that the performance of proactive actions that emerge from passive actions should be regarded as deliberative activism and connected to visible communicative outcomes. The definition describes visible communicative actions as

follows, “In problem solving, selecting certain information over other information and sharing it with others facilitates problem solving because such information behaviors can reproduce similar problem perceptions among people and better mobilize necessary attention to and resources for dealing with the problem” (Kim & Grunig, 2011, p.122). Moreover, scholars address the dynamic role of the active public in issue activation. Members of an active public not only turn to different information sources but also initiate informal conversations inside their own social networks (Kim, Grunig, & Ni, 2010). They may become influential opinion leaders in the networks, functioning to raise others’ problem awareness. Eventually, active publics can motivate other people to engage in solving the problematic situation (Ni & Kim, 2009; Kim et al., 2012).

Theoretically, STOPS explains the different behavioral characteristics of active and passive communicative actions, separating the two. While Kim and Grunig (2011) treat the two, different actions as a whole in measurement and analysis, there are limited empirical approaches for understanding how the active and passive behaviors are differently activated. This study does not regard this as a limitation of STOPS and related research. Rather, this study’s approach assesses communicative actions holistically, as both active and passive. STOPS assumes that each problem-solving communicator is “highly motivated and active in thinking about and acting on their problems (Kim & Grunig, 2011, p.145).” According to STOPS, the public might be expected to be active in all six communicative actions. The holistic assessment provides more nuance in understanding the dynamism of the public as it engages in active and passive communicative actions simultaneously.

Because this study explores the instant public, which is *incited* rather than *self-evolved* to think and act like an active public, and identifies the instant public's behavioral characteristics, a different approach is needed. The assumptions of STOPS are violated by the nature of this study and the definition of the instant public. STOPS assumes proactive actions are co-related to reactive actions. To overcome these violated assumptions, this study will discuss the possibility of independent activation between proactive actions and reactive actions in relation to instant activism and instant publics.

As discussed in Chapter 2, instant activism seeks to generate vocal support for an issue from lay individuals, who are otherwise not seriously aware of or informed about the issue. For example, an information forwarder is eager to disseminate his or her problem perception; his or her preferred way of problem solving is with other communicators. Thus, at a later stage, the purpose of information transmission is to reproduce a similar problem perception and to promote the preferred solution (Kim & Grunig, 2011, p.127). *Information forwarding* behaviors can be presented as forms of visual support, such as sharing, commenting, and liking posts on social media. On the other hand, *information sharing* behaviors are not a form of visible support. Moreover, instant publics are triggered to engage in the problem solving process by an external stimulus within a short period of time and without deliberative consideration. They seem actively or passively choose to handle information without careful regard. Thus, instant activism targets instant publics' active but visible communication; at the same time, instant publics missed the cognitive deliberation step.

Through a review of previous research, this study finds that active communicative actions without deliberation are possible. Active communicative actions are not intrinsically accompanied by systematic cognitive processing or rationally deliberative behaviors, even though previous research described proactive behaviors as active, planned, motivational, or self-propelled (e.g., Kim & Grunig, 2011; Moon, Rhee, & Yang, 2016), Communicative actions are not only problem solving behaviors, but also part of cognitive information processing. Although STOPS refers to the dual processing model (i.e., heuristic-systematic processing model; Chiken, 1980), the theory does not strictly adopt the dichotomized view; active communicative actions are not always associated with systematic processing. For example, the process of information selection by *forfending* is incompatible with heuristic processing because of partial information. Kim and Grunig (2011) call this "express but effortful." Forfending is driven by high motivation and "the problem-solvers [who] tend to use heuristic cues either to economize cognitive resources or to optimize their preferred solutions or end states" (p.144). However, previous research suggests that as a result of information forfending, individuals adopt biased information, which strengthens their partisan views (Kim, Oh, & Krishna, 2016). On the other hand, *information permitting* as passive information selection can be viewed as systematic processing, since it allows the individual to review all passible information with an open mind.

This study proposes that individuals' proactive actions be considered *with* reactive actions; a duality that is unexamined in STOPS research. Because of the characteristics of "evolving," the situational theory of problem solving only

acknowledges individuals who have high level active information behaviors but disregards those who have passive information behaviors. Considering the current social media environment in relation to politicized science issues, this study claims that the instant public can show only active information behaviors without passive information behaviors. The behavioral characteristics of instant publics are generated by a sudden external stimulus, which is distinctive from the internally evolved publics who undergo a gradual process.

Thus, this study uses the spreading of the hoax strategy as an example of instant activism to examine the immediate behavioral changes that take place in the formation of the instant public. In this case, non-profits spread hoaxes about GMO labeling issues to generate individuals' active communicative actions on social media, thereby generating an instant public. The following hypotheses are proposed:

H6: Exposure to a hoax will increase individuals' information seeking.

H7: Exposure to a hoax will not increase individuals' information attending.

H8: Exposure to a hoax will increase individuals' information forfending.

H9: Exposure to a hoax will not increase individuals' information permitting.

H10: Exposure to a hoax will increase individuals' information forwarding.

H11: Exposure to a hoax will not increase individuals' information sharing.

Superficial Principles versus Embedded Principles

Previous research on the line of the situational theory of problem solving regards the communicative action as a behavioral consequence as a result of increasing of situational motivation of problem solving. Moreover, the researchers indicated that the

practical power of the situational motivation, which leads individuals "to do" something (e.g., organ donation; Kim, Shen, & Morgan, 2011) and maintain issue attention (e.g., a problem chain-recognition effect; Kim, Shen, & Morgan, 2011) going beyond participating in one-time activism.

This study would like to make a suggestion to consider the characteristics of online communicative actions and online activism. Even though the effect of online activism in creating chronic active public are still controversial (Skoric, 2012), scholars agree with that it works to collect public attention suggesting a quick and easy way to participate in activism. Behaviors to join online activism, such as liking, sharing, and commenting on, does not require cognitive effort, cost, taking a risk as much as doing traditional activism. Regarding GMO labeling issue, according to a previous survey, 90% support GMO labeling, despite only 10% response that they will consume non-GMOs (Irani, Sinclair, & O'Malley, 2001).

It has been argued that the spillover from joining causes on social media onto protest behavior is more a possibility than a reality. As Morozov (2009) notes, social media activism has been regarded that has no effect on real-life political outcomes but only increase users' sense of personal satisfaction.

In this vein, this study assumes that under current online communication environment, communicative action should be regarded apart from real behavior with embedded principles of the issue they support in online. As discussed above (See Chapter2), this study assumes that instant publics are generated for a disposable mobilization without chronic awareness related issues or deliberative evolving process as

a public. Thus, even though this instant activism could work to deliver superficial principles about the issue, it would be hard to cultivate embedded principles to the instant public who are transformed from non-public at a short time. Thus, Hypothesis 8 and Hypothesis 9 are proposed.

H8: Exposure to a hoax will increase a behavioral intention to recognize GMO ingredients.

H9: Exposure to a hoax will not increase actual behaviors to recognize GMO ingredients.

Method

Research Design and Procedures

A 2x2 between-subjects factorial designed experiment was conducted. The two factors were a hoax strategy (presence vs. absence) and a level of issue involvement (high vs, low). This study adopts political ideology arousal strategy as a traditional campaign tactic to measure an interaction effect with spreading hoax strategy.

An online experimental survey was conducted via Qualtrics, and participants were recruited through an online panel company, Amazon Mechanical Turk (MTurk), with a cash incentive ($0.8). Upon agreement to the online survey, volunteers were randomly assigned one of four condition. Before starting main survey, they asked a screening question: “Do you use Facebook at least once a week?” Those who answered “yes” could participate in the survey.

Main questionnaire includes two parts. At earlier part of survey, participants were asked their general knowledge, attitude, perception, and behaviors about GMO and

GMO labeling issues. Upon subjects completed first parts of questionnaire, one of stimuli was shown with a direction that:

Now, you will see a social media message regarding GMO labeling issues. This message has been posted on Facebook by JustLabelIt, which is a non-profit organization supporting "direct" GMO labeling instead of "indirect" disclosure, such as with a phone number, QR code, or website.

Subjects were asked to complete second parts of questionnaire based on their perception after viewing the message. Some questions were asked repeatedly to measure the differences between pre- and post-exposure to stimuli.

Stimuli development

The stimuli for the Study 2 were made with a 2 (hoax strategy: presence vs. absence) x2 (issue involvement: high vs. law) between-subjects factorial design. This study adopts issue involvement to confirm the effect of exposure a hoax in comparison.

This study manipulated the key variables, which are a hoax and issue involvement, by constructing social media messages focusing on the issue of GMO labeling. Stimuli were revised in the context based on existing Facebook campaign messages posted by JustLabelIt, which is a non-profits advocating change of the new federal law allowing indirect GMO label. Each stimulus includes different messages, images, and descriptions about the flaw of the federal GMO labeling law (see Appendix A).

Hoax strategy was manipulated to divide into a presence condition and an absence condition. This study regards a hoax as "a deceptive message to allude

conspiracy theory, which is associated with a group or an individual who are suspected to take advantage of," following previous research regarding hoaxes (e.g., van der Linden, 2015; Veil, Sellnow, & Petrun, 2012; Veil et al., 2015) . To operationalize the definition, this study designs the hoax presence condition with a message, which disclose a conspiracy that "GMO labeling is a hoax" and further explanation was suggested regarding how the new GMO labeling law deceive people. The explanation was revised from one of the JustLabelIt's Facebook post and adopted for this experiment. In the hoax absence condition, neutralized explanation regarding the law was suggested with a notion that the law should be changed.

Issue involvement was operationalized as close personal connections with GMO labeling issues to be recognize how seriously the problem affects each experiment participant. For the high issue involvement condition, following Petty and Cacioppo (1981), a specific case, which they would be affected personally by the new GMO labeling law, was described, with a real product and its current GMO labeling policy. A Hershey's chocolate was selected as the real food product since the company is indicating GMO ingredients in their products with QR codes (June, 2017). A picture of Hershey's chocolate attaching a QR code is suggested to show how the law is presented in real world. To strengthen the personal relationship between the Hershey's and each participant, Hershey's were described as "America's No.1 selling chocolate brand," "You" were suggested as a direct object of the message by second personification method. On the other hand, for the low issue involvement condition, a QR code were presented

without real product with the message in third personification method. A specific name of products and a person who are supposed to be affected by the law were not suggested.

Manipulation Check

Pretest. A pretest was conducted to ensure that the stimuli developed for each experimental condition had the intended effects and generate significant differences between different stimuli. Total 92 volunteered participants were recruited by MTurk with $ 0.2 cash incentive. They are excluded in main test participants recruiting. The answers were measured with 7-point scale.

In terms of the manipulation of a hoax, another independent samples T-test was conducted with the level of participants' agreement with this sentence: "There is a group of people behind GMO labeling issues, who are trying to purposely mislead the public." The result indicated that participants in the hoax presence condition ($M = 4.68$, $SD = 1.55$) had a significantly higher score than those in the hoax absence condition ($M = 3.75$ $SD = 2.17$), $t = 1.66$, $p < .05$. Therefore, the hoax manipulation was also successful.

Manipulations of issue involvement were checked by asking each subject's level of agreement with that "it seems like even the food products I usually consume contain GMOs only with QR code labeling." In order to check the manipulation of political ideology, an independent samples T-test was conducted with the two manipulation conditions (high versus low). The result presented that participants in the high issue involvement condition ($M = 4.39$, $SD = 1.83$) had a significantly higher score than those in the low issue involvement condition ($M = 3.43$, $SD = 1.20$), $t = 2.10$, $p < .05$. Thus, the issue involvement manipulation was successful.

Main Test. In main test, all subjects were requested to answer two questions for manipulation checks at the end of the experiments. The same manipulation check items and scales were adopted from the pretest.

When it comes to the manipulation of a hoax, the result of an independent samples T-test suggested that participants in the hoax presence condition ($M = 4.93$, $SD = 1.42$) had a significantly higher score than those in the hoax absence condition ($M = 4.46$, $SD = 1.67$), $t = 2.36$, $p < .05$. Therefore, the hoax manipulation was also successful.

The result of an independent samples T-test for the manipulation check of issue involvement showed that participants in the high issue involvement condition ($M = 4.79$, $SD = 1.35$) had a significantly higher score than those in the low issue involvement condition ($M = 4.29$, $SD = 1.342$), $t = 2.82$, $p < .01$. Thus, the issue involvement manipulation was successful.

Sample

A total of 241 Facebook users who are in U.S. residential, participated in this survey. The fifteen incomplete and straight marked responses were removed from the final dataset. The average age of the participants was 35.8 years old, ranging from 19 to 79 (SD =12.46). Of the participants, 56.8% were females and 43.2% were males. Among them, whites or Caucasians were 71.0%, Asians were 10.8%, Blacks or Africans were 9.5%, Hispanics or Latinos were 6.6%, and Native Americans were or others were 2.1%. Most participants (20.7%) had an annual household income of $50,000 - $74,999 ($15,000 - $24,999 (14.1%), $25,000 - $34,999 (11.6%), $35,000 - $49,999 (17.8%), $75,000 - $99,999 (14.1%), $100,000 - $149,999 (10.4%), and $150,000 or more (1.7%)).

A total of 43.2% of the participants were college graduates, while 30.3% completed some college, but had no degree; 2.1% were high school graduates or the equivalent; 9.5% were completed some high school; 12.9% completed a graduate degree; and 1.7% completed some graduate school, but not a degree.

Measures

Dependent variables.

All the variables to represent the situational theory of problem solving were adopted from previous study (Krishna, 2016; Kim & Grunig, 2011). Each items were revised to GMO labeling issue context for this study.

Situational antecedents (i.e., problem recognition, constraint recognition, involvement recognition, referent criterion) and situational motivation in problem solving were measured twice to test the main effect. To do so, each participant was asked to indicate the level of agreement for each statement before and after viewing an assigned stimulus with 7-point Likert scale (1: strongly disagree – 7: strongly agree).

Problem Recognition was measured by "GMO labeling issues are serious social and national problems," "GMO labeling issues should be dealt with more seriously by the government and related organizations" and "There should be immediate efforts to resolve GMO labeling issues." (Cronbach's α for pre-measure =.92, M = 4.46, SD = 1.39; Cronbach's α for post-measure =.94, M = 4.84, SD = 1.51)

Constraint Recognition was measured by "The government and related organizations will consider opinions from a person like me on GMO labeling issues," "If I try, opinions from a person like me on this issue can affect regulations related to GMO

labeling issues," and "I (my efforts) can help in resolving GMO labeling issues." All items for measuring constraint recognition were revers-coded (Cronbach's α for pre-measure =.89, M=4.38, SD=1.46; Cronbach's α for post-measure =.92, M=4.09, SD=1.61)

Involvement Recognition was measured by "GMO labeling issues are significantly related to me," "GMO labeling issues potentially affect my family members/friends," and"I am connected with GMO labeling problem and its consequences." (Cronbach's α for pre-measure =.84, M=3.72, SD=1.48; Cronbach's α for post-measure =.90, M=4.49, SD=1.54)

Situational Motivation was measured by "I am curious about GMO labeling issues," "I often think about GMO labeling issues," and "I want to better understand GMO labeling issues." (Cronbach's α for pre-measure =.75, M = 4.30, SD = 1.36; Cronbach's α for post-measure =.91, M = 4.94, SD = 1.51)

Reference Criterion was measured by "I am confident about my knowledge about GMO labeling issues," "I strongly support a certain way of resolving GMO labeling issues," "I have a preference for how GMO labeling issues should be settled," "I am pretty sure, I know how to solve GMO labeling issues" and "Past experience has provided me with guidelines for solving GMO labeling issues. (Cronbach's α for pre-measure =.90, M=3.06, SD = 1.37; Cronbach's α for post-measure =.91, M = 3.90, SD = 1.53)

To measure the six different communicative actions for problem solving, each participant was asked to report their degree of agreement with the following statements n a 7-point Likert Scale (1: strongly disagree – 7: strongly agree).

Information Seeking was measured by "I will search for more information about GMO labeling issues on Internet," "I will search for more information about GMO labeling issues on the websites of the WHO or experts in the related industry," "I will search for news articles or blog/social media postings related to GMO labeling issues," and "I will spend time and effort to find information related to GMO labeling issues." (Cronbach's α = .96, M = 4.21, SD = 1.67).

Information Attending was measured by "I will pay attention to Internet/TV and/or radio programs discussing GMO labeling issues," "I will pay attention to family members/friends who discuss GMO labeling issues," "If the WHO and/or related non-profit organizations publish/post available information on GMO labeling issues, I willing to read them." (Cronbach's α=.92, M = 4.82, SD = 1.49).

Information Forefending was measured by "Now, I will try to be able to judge whether the information related to GMO labeling issues are credible/helpful or not," "I will try to know who provided false information related to these GMO labeling issues," and "I will have a selection of trusted sources that I can check for updates on these GMO labeling issues." (Cronbach's α = .92, M = 4.82, SD = 1.49).

Information Permitting was measured by "I will welcome any information about the problem around GMO labeling issues," "I will be interested in all views on the problem around GMO labeling issues," "I will listen to media reports on GMO labeling issues even if I didn't agree with them," and "I will like to discuss GMO labeling issues with people who disagree with my opinions to broaden my perspective." (Cronbach's α = .91, M = 4.73, SD = 1.42)

Information Forwarding was measured by "I am willing to spare my time to discuss GMO labeling issues with someone I do not know well," "When there are opportunities, I will explain GMO labeling issues to my family members and/or friends," and "I will (often) have conversations with people around me about GMO labeling issues" (Cronbach's α = .90, M = 3.98, SD = 1.59).

Information Sharing was measured by "Although I am interested in GMO labeling issues and participate in related conversation, I will not lead the conversation aggressively," "My family members/friends tend to ask my opinions about GMO labeling issues," and "I will join in conversations about GMO issues if someone else brings them up" (Cronbach's α=.94, M = 4.17, SD = 1.17).

Embedded principles were measured with non-GMO purchase intention and active oraging for non-GMOs.

General purchase intention was measured with the subjects' food purchasing behavior and attitude towards GMO technology, following Kim, Kim, and Besely (2013). The participants were asked to indicate levels of agreement to the following statements: "I often purchase foods that contain GMOs (Reversed)," "I never consume any foods that contain GMOs.," "I tend to purchase non-GMOs over GMOs although they often cost more," and "I support a use of genetic modification technology for producing foods (reversed)." (Cronbach's α=.68, M = 3.62, SD = 1.16).

Willingness to pay costs was measured by asking the participants' intention to adopt specific tactics to avoid GMOs in their everyday life. With 7-point scale (1: definitely not – 7: definitely yes). Each item includes a behavior, which requires high-

effort and high-cost, to get non-GMOs different from cognitive intentions (i.e., general non-GMO purchase intention). The specific tactics were revised based on a related content of Wikihow (http://www.wikihow.com/Avoid-Genetically-Modified-Foods). Each participant was requested to indicate their level of willingness with the following sentences: "Buy food labeled 100% organig," "Recognize fruit and vegetable label numbers," "Buy 100% grass-fed meat," "Seek products that are specifically labeled as non-GMO or GMO-free," "Shop foods locally," "Buy whole foods, rather than foods that are processed or prepared," and "Grow your own food." Cronbach's α=.854, M = 4.79, SD = 1.34).

Control variables.

Controlling for variables is important in statistical analysis to observe significant relationship between main variables that researchers intend to study. This treatment reduces the confounding effect of irrelevant variables that are not intended to be studied (Baron & Kenny, 1986).

Internet use was measured with two sub-categories: overall internet use and social media active use. Recent research, which adopt the situational theory of problem solving and the concept of communicative actions, indicated that internet use, especially social media use, has significant impact on information dissemination behaviors (Xie, Qiao, Shao, & Chen, 2017). **Overall internet use** was measured by asking "How much do you use the internet on a typical day?" with 7-point scale (1: Never – 7: more than 10 time a day) (M = 5.50, SD = 1.50)**. Social media active** was measured by asking "in the past month on social media sites, how often do you use it for the following activities?"

with 7-point scale (1: Never – 7: more than 10 time a week): “Posting personal experiences or thoughts,” “Liking/loving/reacting to a post,” “Replying/commenting to others' post/tweets,” and “Sharing or retweeting others' post” (Cronbach's α = .88, M = 3.85, SD = 1.55).

Distrust was measured by asking participants’ negative attitudes toward general non-profit organizations, JustLabelIt, and general politicians. Corporate cynicism and political consumerism were also adapted as distrust variables. Previous research showed that pre-existing attitude toward an involved actor of an issue tends to make individuals to do biased reasoning regarding the issue (e.g., Lodge & Taber, 2000). Moreover, recent research suggested that negative attitude toward related actors can be a cause of engaging in communicative actions with knowledge defection (Krishina, 2016). In this regard, the participations’ general attitude toward politicians, non-profits, JustLabelIt, and corporations were analyzed.

Distrust toward each player measured by asking participants’ negative attitudes toward politicians, adopting previous research (MacKenzie & Lutz, 1989), with three 7-point bipolar items, which are “1: Good - 7: Bad,” “1: Pleasant- 7: Unpleasant” and “1: Favorable – 7: Unfavorable” (Distrust toward non-profit organizations: Cronbach's α = .89, M = 2.35, SD = 1.13, Distrust toward JustLabelIt: Cronbach's α = .94, M = 2.96, SD = 1.38, Distrust toward general politicians: Cronbach's α = .94, M = 4.34, SD = 1.43).

Corporate cynicism. Cynicism refers to a general attitude toward particular objects, whether they take others as trustworthy and sincere (Andersson & Bateman, 1997). Previous research suggests that individuals with cynical attitude may doubt a

company's motivations for their activities (Helm, 2004). Therefore, this study assumes that corporate cynicism has impact on the effect of the hoax strategy. Corporate cynicism measurement items were modified from existing political cynicism scale (Adriaansen, Van Praag, & De Vreese, 2010). Participants were asked their degree of agreement to these four statements with 7-point Likert scale: " Most corporations do not consciously promise more than they can deliver," "Corporations are primarily self-interested," "Corporations do not understand what matters to society," and "Corporations are capable of solving important problems." (Cronbach's α = .61, M = 4.18, SD = .70).

Political Consumerism were measured by asking each subject's life-style politics as a consumer. The items were modified from Stolle, Hooghe, and Micheletti (2005). Participants were asked to indicate how agree or disagree with these four statements with 7-point Likert scale: **"**I think it is a good thing when brands get involved with political issues," "Brands (corporations) should support political issues that reflect their values," "I would personally support a brand or company more if they supported a political issue I support," and "I would boycott a brand or company if they supported a political issue I oppose." (Cronbach's α =.74, M = 4.33, SD = 1.24).

Previous issue familiarities were measured with GMO issue literacy, GMO labeling issue knowledge, non-GMO food preference. Issue familiarities are regarded to effect whether rely on cues in information processing (e.g., Hung-Baesecke, Chen, & Kim, 2015). **GMO issue literacy** was measured by asking the participants general knowledge regarding GMO technology and usage. The items were created. After asking six true/false questions to the participants, the numbers of right answers were used as

their GMO issue literacy level. The six questions are “GMO stands for “genetically modified organism (True),” “ Genetic modification of food involves the laboratory process of artificially inserting genes into the DNA of food crops or animals (True),” “When you purchase products labeled 100% organic or all natural, ingredients in these products are not allowed to be produced from GMOs (False),” “Canned and processed foods do not contain GMOs (False),” “Produce cannot contain GMOs (False),” “Some plants are made resistant to pests by using a gene from bacteria (True).” The items were first recoded with correct responses codded as 1 and incorrect responses as 0 and then added to form a composite index (M =3.84, SD = 1.59).

GMO labeling issue knowledge was measured by asking whether the participants know specific details of the new GMO labeling know, which went into effect in July 2016. This study created five items based on current issues regarding the GMO labeling issues in the US. Participants were requested to answer among “Yes,” “Maybe,” or “No” for five questions, which are “I can explain what the new GMO labeling law is,” “I have heard about the arguments around the new GMO labeling law,” “I know that the federal government has adopted the indirect way of GMO labeling, such as QR codes or ARS,” “I know the difference between the direct ways and the indirect ways for GMO ingredients labeling,” and ”I know how the new federal law is different from a Vermont law on GMO labeling.” True/false questions, which might suggest background knowledge, were not adapted for measuring GMO labeling issue knowledge to eschew a compounding effect for answering following questions (Cronbach's α = .824, M = 2.14, SD = 2.53).

Result

Repeated-measures mixed ANOVAs, with GReenhouse-Geisser correction, were conducted to assess whether there were significant differences between before and after exposure to a hoax in recognizing GMO labeling issues. Mixed ANOVA analysis technic is useful to analyze interaction effect between within-subject effect and between-subject effect. Based on guidelines to interpret the analysis (Leech, Barrett, & Morgan, 2015), the following assumptions were tested: (a) independence of observations, (b) normality, and (c) sphericity. Independence of observations and normality were met. The assumption of sphericity was violated. Thus, the Greenhouse-Geisser epsilon was used to correct degrees of freedom. In this study, the main effect of the experiment (i.e., pre- and post-exposure to stimuli across conditions) analyzed as a within-subject effect. Between-subject effects were tested for the hoax strategy (presence vs. absence), level of issue involvement (high vs. low), and the interaction effect between exposure to a hoax and level of issue involvement. Age, gender, race, income, education, distrust toward JustLabelIt, corporate cynicism, and social media active use were controlled as covariances (see Table 5).

Hypothesis 1 posited a positive relationship between exposure to a hoax and the problem recognition. The results indicated a statistically significant main effect of the experiment within-subject, which showed that there is a significant difference between before and after viewing stimuli in measuring the problem recognition across conditions ($F(1, 227) = 4.09$, $p < .05$, $\eta^2_p = .02$). However, the experiment main effect was not significantly qualified by interactions with between-subject effects. It means there is no

statistically significant different changes between various conditions after viewing the different stimuli. Thus, Hypothesis 1 is not supported.

Table 5 Mean and Standard deviations for Problem Recognition, Constraint Recognition, Involvement Recognition, Situational Motivation, and Reference Criterion

		Problem Recognition	Constraint Recognition	Involvement Recognition	Situational Motivation	Reference Criterion
Pre-exposure	Group1 (N=56)	4.32 (1.28)	4.38 (1.41)	3.45 (1.37)	4.14 (1.35)	3.03 (1.24)
	Group2 (N=64)	4.30 (1.42)	4.43 (1.36)	3.74 (1.52)	4.35 (1.40)	3.12 (1.34)
	Gourp3 (N=60)	4.49 (1.53)	4.41 (1.61)	3.79 (1.57)	4.31 (1.44)	3.06 (1.57)
	Group4 (N=61)	4.73 (1.31)	4.31 (1.49)	3.87 (1.45)	4.40 (1.26)	3.03 (1.31)
	Total (N=241)	4.46 (1.39)	4.38 (1.46)	3.72 (1.48)	4.30 (1.36)	3.06 (1.37)
Post-exposure	Group1 (N=56)	4.68 (1.58)	4.02 (1.64)	4.29 (1.56)	5.03 (1.54)	3.18 (1.51)
	Group2 (N=64)	4.70 (1.51)	4.31 (1.54)	4.35 (1.51)	4.95 (1.43)	3.66 (1.50)
	Gourp3 (N=60)	4.91 (1.58)	3.95 (1.60)	4.62 (1.64)	4.87 (1.62)	3.97 (1.62)
	Group4 (N=61)	5.04 (1.37)	4.06 (1.68)	4.68 (1.45)	4.90 (1.49)	4.23 (1.46)
	Total (N=241)	4.48 (1.51)	4.09 (1.61)	4.49 (1.54)	4.94 (1.51)	3.9 (1.53)

Note. Group1 = Hoax presence*High Issue Involvement, Group2 = Hoax presence*Low Issue Involvement, Group3 = Hoax Absence*High Issue Involvement, Group4 = Hoax absence*Low Issue Involvement.

Hypothesis 2 expected negative association between exposure to a hoax and the constraint recognition. A statistically significant main effect of the experiment was suggested within subjects. That is, there is significant differences between a pre- and a post-exposures to stimuli in measuring the participant's constraint recognition across conditions ($F(1, 227) = 6.68$, $p < .01$, $\eta^2_p = .03$). However, the result suggested that there

were no interaction effects between the main effect of experiment and the hoax strategy nor the issue involvement in the constraint recognition. Thus, Hypothesis 2 is not supported.

Hypothesis 3 stated that exposure to a hoax increases the involvement recognition. The results indicated a statistically significant main effect of experiment, which means that there is statistically significant difference between before and after exposures to stimuli in presenting the involvement recognition across conditions ($F(1, 227) = 4.47$, $p < .05$, $\eta^2_p = .02$). However, a statistically significant difference between different conditions was not found. Thus, Hypothesis 3 is not supported.

Hypothesis 4 predicted a positive association between exposure to a hoax and situational motivation. The results showed a statistically significant main effect of experiment. Thus, there is statistically significant difference between before and after exposures to stimuli in measuring the situational motivation across conditions ($F(1 ,227) = 6.39$, $p < .05$, $\eta^2_p = .03$). Moreover, the experiment main effect was qualified by an interaction with the exposure to a hoax effect between subjects ($F(1, 227) = 5.58$, $p < .05$, $\eta^2_p = .02$), while other interaction effects in association with the issue involvement were not found. Therefore, Hypothesis 4 is supported.

Hypothesis 5 claims that exposure to a hoax has positive impact on the referent criterion. The results indicated a statistically significant main effect of experiment, which means that statistically significant different level of the referent criterions were measured after exposures to the stimuli across conditions ($F(1, 227) = 4.89$, $p < .05$, $\eta^2_p = .02$). The experiment main effect was statistically significant when it interact with the hoax strategy

($F(1, 227)=3.56$, $p <.10$, $\eta^2_p =.02$). Other interaction effects were not statistically significant. Thus, Hypothesis 5 was supported.

In order to test the effect of a hoax to change individual's engagement in communicative actions and embedded principles, hierarchical linear regression models were designed and examined with eight different dependent variables (i.e., information seeking, information attending, information forefending, information permitting, information forwarding, information sharing, behavioral intention, information sharing, general purchase intention, willingness to pay costs). The each regression analysis employed the following four blocks of independent variables entered in this order: block 1: demographics (age, gender, race, income, education); block 2: internet use (overall internet use, social media active use), distrust (corporate cynicism, political consumerism, distrust toward non-profits, distrust toward Just Label It, and distrust toward politicians); block 3: previous issue familiarity (GMO issue literacy, GMO labeling issue knowledge, and non-GMO food preference); block 4: Exposure to stimuli (hoax, involvement and interaction effect (hoax x involvement)). The coefficients of block 4 are suggested in Table 6, 7,8 and 9.

In terms of information acquisition, Hypothesis 6 expects a positive relationship between exposure to a hoax and information seeking. On the other hand, Hypothesis 7 asserts that exposure to hoax will not increase individuals' information attending. As seen Table 4, the results suggested that hoax has statistically significant effect to expect only for information seeking ($\beta = .19$, $p < .05$), but information attending. Thus, Hypothesis 6 and Hypothesis 7 were supported (see Table 6).

Regarding information selection, Hypothesis 8 predicts a positive association between exposure to a hoax and individuals' information forefending. In contrast, Hypothesis 9 supposes that exposure to hoax will not increase individuals' information permitting. The results indicated that hoax has statistically significant expecting power only to information forefending ($\beta = .17$, $p < .05$), but information permitting (see Table 7). Therefore, Hypothesis 8 and Hypothesis 9 were supported.

When it comes to information transmission, Hypothesis 10 claims that exposure to a hoax has impact on increasing individuals' information forwarding. Hypothesis 11 expects that exposure to hoax will not increase individuals' information sharing. As Table 8 suggests, the hoax strategy does not have statistically significant impact on both information forwarding and sharing. Thus, Hypothesis 10 was not supported, but Hypothesis 11 was supported (see Table 8).

In terms of behavioral embedded principles, which are expected to be different from superficial principles, Hypothesis 12 predicted a positive relationship between exposure to a hoax and general purchase intention. Hypothesis 13 expected that exposure to a hoax will not increase willingness to pay costs. As seen Table 9, the results showed that hoax does not have effects on neither general non-GMOs purchase intention nor do actionable non-GMOs purchase intention. Accordingly, Hypothesis 12 was not supported, whereas Hypothesis 13 was supported (see Table 9).

Table 6 Regression of the Effect of Hoax Strategy on Information Seeking and Information Attending

	Information Seeking β (*t* statistic)	Information Attending β (*t* statistic)
Demographic variables		
Age	.09(1.49)	.15(2.52)*
Gender (Male = high)	.01(.17)	-.03(-.53)
Race (White = high)	.02(.33)	.03(.56)
Income	-.01(-.14)	-.07(-1.23)
Education	-.06(-1.11)	-.02(-.27)
Internet use		
Overall internet use	.10(1.61)	.01(.08)
Social media active use	.12(1.95)†	.11(1.85)†
Distrust		
Corporate cynicism	.04(.64)	.01(.11)
Political consumerism	.23(3.81)***	.18(2.96)**
Distrust toward non-profits	-.02(-.23)	-.09(-1.39)
Distrust toward Just Label It	-.24(-3.90)	-.20(-3.26)**
Distrust toward politicians	-.13(-2.20)*	.07(1.20)
Previous issue familiarity		
GMO issue literacy	.07(1.21)	-.01(-.19)
GMO labeling issue knowledge	.08(1.40)	.09(1.48)
Non-GMO food preference	.34(5.86)***	.32(5.38)***
Exposure to stimuli		
Hoax	.19(2.47)*	.02(.28)
Involvement	.04(.56)	.-.10(-1.31)
Hoax X Involvement	-.15(-1.64)	-.01(-.09)
Adj. R^2	.33	.30
F(18, 224)	7.50***	6.64***

Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

Table 7 Regression of the Effect of Hoax Strategy on Information Forefending and Information Permitting

	Information Forefending β (*t* statistic)	Information Permitting β (*t* statistic)
Demographic variables		
Age	.10(1.70)†	.08(1.18)
Gender (Male = high)	.04(.75)	-.02(-.25)
Race (White = high)	.02(.34)	-.02(-.26)
Income	-.01(-.22)	-.05(-.75)
Education	-.04(-.74)	-.01(-.15)
Internet use		
Overall internet use	.00(.02)	-.04(-.59)
Social media active use	.10(1.72)†	.13(1.98)*
Distrust		
Corporate cynicism	.07(1.14)	.00(.02)
Political consumerism	.23(3.78)***	.20(3.10)**
Distrust toward non-profits	.07(1.07)	.00(.01)
Distrust toward Just Label It	-.32(-5.23)***	-.24(-3.72)***
Distrust toward politicians	-.04(-.68)	.06(.89)
Previous issue familiarity		
GMO issue literacy	.06(.94)	-.01(-.07)
GMO labeling issue knowledge	.12(2.02)*	.06(.91)
Non-GMO food preference	.32(5.52)***	.29(4.62)***
Exposure to stimuli		
Hoax	.17(2.16)*	.05(.56)
Involvement	.20(.25)	.-.06(-.72)
Hoax X Involvement	-.08(-.91)	.05(.54)
Adj. R^2	.32	.22
F(18, 224)	7.17***	4.73***

Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

Table 8 Regression of the Effect of Hoax Strategy on Information Forwarding and Information Sharing

	Information Forwarding β (*t* statistic)	Information Sharing β (*t* statistic)
Demographic variables		
Age	.06(1.05)	.04(.63)
Gender (Male = high)	.00(.08)	.03(.43)
Race (White = high)	.02(.40)	-.10(-1.55)
Income	-.01(-.09)	-.07(-.78)
Education	-.05(-.89)	-.05(-.40)
Internet use		
Overall internet use	.04(.72)	-.03(-.40)
Social media active use	.12(2.06)*	.08(1.20)
Distrust		
Corporate cynicism	.05(.89)	.10(1.60)
Political consumerism	.17(2.85)**	.22(3.47)**
Distrust toward non-profits	.05(.77)	-.05(-.78)
Distrust toward Just Label It	-.29(-4.70)***	-.20(-3.16)**
Distrust toward politicians	-.12(-2.07)*	-.07(-1.15)
Previous issue familiarity		
GMO issue literacy	.07(1.13)	-.02(-.38)
GMO labeling issue knowledge	.13(2.32)*	.17(2.85)**
Non-GMO food preference	.36(6.21)***	.23(3.71)***
Exposure to stimuli		
Hoax	.19(1.67)†	.09(1.13)
Involvement	.09(1.11)	.05(.63)
Hoax X Involvement	-.12(-1.27)	-.08(-7.77)
Adj. R^2	.32	.24
F(18, 224)	7.28***	5.29***

Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

Table 9 Regression of the Effect of Hoax Strategy on General non-GMO Purchase Intention and Willingness to Pay Costs

	General non-GMOs	Willingness

	Purchase Intention β (*t* statistic)	to Pay Costs β (*t* statistic)
Demographic variables		
Age	.09(2.05)*	-.02(-.25)
Gender (Male = high)	-.13(-3.00)**	-.01(-.09)
Race (White = high)	.00(.06)	.07(1.28)
Income	-.05(-1.27)	-.12(-2.01)
Education	-.08(-1.94)†	-.03(-.54)
Internet use		
Overall internet use	.04(.05)	.10(1.65)
Social media active use	.02(.36)	.74(1.26)
Distrust		
Corporate cynicism	-.09(-2.23)*	-.02(-.37)
Political consumerism	.09(2.06)*	.26(4.22)***
Distrust toward non-profits	.08(1.57)	.00(.00)
Distrust toward Just Label It	-.21(-4.71)***	-.12(-1.94)†
Distrust toward politicians	.04(.91)	.02(.29)
Previous issue familiarity		
GMO issue literacy	.03(.56)	.18(2.98)**
GMO labeling issue knowledge	-.06(-1.33)	.06(1.03)
Non-GMO food preference	.69(16.07)**	.45(7.83)***
Exposure to stimuli		
Hoax	-.06(-1.13)	-.07(-.97)
Involvement	-.07(-1.30)	-.09(1.14)
Hoax X Involvement	.09(1.37)	.09(.99)
Adj. R^2	.63	.32
F(18, 224)	23.56***	7.38***

Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

Discussion

Social media hoax has a unique impact on promoting individuals' motivation and communicative actions to solve a problem. The results indicated that individuals had higher motivation for problem solving as a prompt response to viewing a hoax message. However, hoax does not have an impact on situational antecedents (i.e., problem recognition, constraint recognition, and involvement recognition). Even though the results do not support this study's primary hypotheses, which tried to address the process of having the motivation to solve a problem based on the situational theory of problem solving, the outcomes might be more plausible to explain the process of instant inciting. This is because, the theory basically assumes that public activeness is increased by internal evolving from low level of activeness to high level of activeness (Grunig, 1996; Kim & Grunig, 2011; Hallahan, 1999). Thus, the external triggering might suggest a different route, which skips the deliberative process of assessing situational antecedents. The findings of the Study2 support this explanation. Study 2 also indicated that the individuals showed a higher level of referent criteria than before they were exposure the hoax regarding GMO labeling issues. This study considers the referent criteria as a key of confident short-cut to be engaged in communicative actions to solve a problem.

The second stage of this study was to propose and examine behavioral characteristics of instant publics about GMO labeling issues. This study assumes that communicative actions as results of exposure to a hoax would be different from evolved publics' behaviors, which are suggested by previous research (e.g., Kim& Grunig, 2011). As this study expected, the results showed that individuals are willing to engage in active communicative actions (i.e., information seeking and information forfending) without

passive communicative actions (i.e., information attending, information permitting, and information sharing), and embedded principles (i.e., non-GMOs purchase intention, willingness to pay costs), when they viewed a social media hoax.

The results indicated that the hoax strategy cannot change individuals' issue principles. The findings stated that their active communicative actions as results of triggering social media hoax do not associate with the individuals' embedded principles (i.e., willingness to pay costs) about the related issues. At the same time, hoax strategy did not have an impact on increasing the superficial principles (i.e., non-GMO purchase intention), even though this study posited the positive relationship between exposure to a hoax and superficial principles. The instantly generated communicators are not likely to be careful of checking GMO ingredients as well as not actively avoid to GMOs in their real life, although they are willing to seek, select, and forward actively related information on social media. With these results, this study succeeds to empirically showed the possibility of instant activism, which is initially proposed concepts from this study.

Table 10. Table Summary of Hypotheses Test Results of Study 2

	Hypotheses	Results
Hypothesis 1	Exposure to a hoax will increase the problem recognition.	Not Supported
Hypothesis 2	Exposure to a hoax will decrease the constraint recognition	Not Supported
Hypothesis 3	Exposure to a hoax will increase the involvement recognition.	Not Supported
Hypothesis 4	Exposure to hoax will directly increase situational motivation.	Supported
Hypothesis 5	Exposure to a hoax will increase the referent criterion	Supported
Hypothesis 6	Exposure to a hoax will increase individuals' information seeking.	Supported
Hypothesis 7	Exposure to a hoax will not increase individuals' information attending.	Supported
Hypothesis 8	Exposure to a hoax will increase individuals' information forfending.	Supported
Hypothesis 9	Exposure to a hoax will not increase individuals' information permitting.	Supported
Hypothesis 10	Exposure to a hoax will increase individuals' information forwarding	Not Supported
Hypothesis 11	Exposure to a hoax will not increase individuals' information sharing.	Supported
Hypothesis 12	Exposure to a hoax will increase a behavioral intention to recognize GMO ingredients.	Not Supported
Hypothesis 13	Exposure to a hoax will not increase actual behaviors to recognize GMO ingredients.	Supported

CHPTER5. DISCUSSIONS

Discussions of Results and Implications

This study explicated instant activism as a popularized but problematic phenomenon in current high uncertainty circumstances. Because there have been mostly optimistic approaches regarding pseudo-activism phenomena (e.g., slacktivism, hot-issue public) on social media, scholars and general populations tend to have naïve expectations that the phenomena would be transformed to meaningful activism and the participants would be evolved to active publics (e.g., Kristofferson, White, & Peloza, 2014; Lee & Hsieh, 2012; Morozov, 2009). In these current social contexts, organizations might be tempted to generate instant publics to mobilize resources with quick-and-dirty way. Furthermore, organizations tend to abuse the spreadability of social media to advocate their own position by swaying over individual users' perception and manipulating their behavior. The outcomes of this thesis would be a turning point to the alarm that pseudo-activism is a serious social problem, which is already abused without social surveillance and regulations.

The objectives of this study were three thread folds. First, this study tried to identify the process and outcomes of non-profits' spreading hoax strategy on social media regarding GMO labeling issues. Second, this study sought to contribute to public relations and communication scholarship by expanding our understanding of a new pseudo-activism. To do so, this study empirically examined the relationships between exposure to social media hoax and lay individuals' issue engagements on social media in the context of GMO labeling issues in the US as a politicized science issue.

Grounded in two empirical studies of its measurement and predictability of public behaviors in the context of GMO labeling issues, this thesis proposes a conceptualization of instant public. The idea of instant publics, which are individuals who are motivated promptly to aware a problem and actively participate in low-cost communicative actions for issue advocacy, but displays deficiencies in embedded principles in his or her personal life regarding the issue, was proposed and empirically verified their characteristics. Not only did this thesis provide theoretical explanations of why individuals incited to do social media vocal actions without deliberative understanding and embedded principles about a certain issue, but it also provided empirical evidence of the effects of instant activism.

The effect of instant activism was significant. The results suggested that social media hoax has an impact on promoting individuals' motivation and communicative actions, different from other extraneous stimuli such as political ideology (Study 1) and issue involvement (Study 2). As Study 1 suggests, when individuals are exposed to hoax on social media, they are more likely to have the motivation to know more about the issue. The results of Study 2 also indicated that individuals had higher motivation for problem solving as a prompt response to viewing a hoax message.

Especially, the instant activism with hoax strategy did an exceptional role in shortening the individuals' process to be motivated and engaged in problem-solving actions. In Study 1, individuals increased issue processing motivation without changing of issue confidence and issue involvement, after viewing a hoax. In the same vein, the results of Study 2 showed that hoax strategy has an impact on promoting problem-solving

motivation without problem assessing the process. Moreover, when individuals viewed a hoax, their referent criterions regarding the issue were increased. This study theoretically defined that issue processing path depending on the referent criterions as a confident short-cut.

On the other hand, results showed that instant activism has no association with issue involvement. The participants were not more likely to feel a personal connection with an issue after viewing related hoax (Study 1). Moreover, issue involvement has no impact to immediately increase neither motivations nor behavioral actions for problem-solving (Study 2). The results posit that the issue involvement should be viewed as a long-term variable, which cannot be varied by extraneous triggering in a short time. In the two experiment, spreading hoax strategy showed significant short-term effects.

This study also found the limitation of the instant activism. The results indicated that the hoax strategy cannot change individuals' issue principles. The findings indicated that their active communicative actions as results of triggering social media hoax do not associate with the individuals' embedded principles (i.e., willingness to pay costs) about the related issues. At the same time, hoax strategy did not have an impact on increasing the superficial principles (i.e., non-GMO purchase intention), even though this study posited the positive relationship between exposure to a hoax and superficial principles. The instantly generated communicators are not likely to be careful of checking GMO ingredients as well as not actively avoid to GMOs in their real life, although they are willing to seek, select, and forward actively related information on social media. With these results, this study succeeds to empirically showed the possibility of instant activism,

which is initially proposed concepts from this study. Considering the ultimate goal of activism should be the society with individuals' real-life practice, increasing communicative action without issue principle should be regarded as a failed strategy.

Moreover, with the result about information giving actions, this study found also the limitations of diffusion of false information phenomenon as a public mobilization strategy as well as spreading hoax strategy. Despite social concerns, the results showed that hoax strategy has no impact to manipulate people to deliver the contents on social media not only active giving (i.e., information forwarding) but also passive giving (i.e., information sharing). The result gave an optimistic view towards information processing actions when individual faced an irrational information on social media.

The result supported this study's focal assumption that information processing of a politicized science issue would be through the subjective path. The outcome showed that the ability, which promotes to process and engages in a science-related issue, is based on individuals' personal self-evaluation not scientific literacy or factual knowledge. Study1 reviled the role of issue confidence as a perceived level of issue knowledge, which is different from objective issue processing ability. The results showed that the issue confidence directly increases individuals' motivation whether they process GMO labeling issues, as well as indirect effects when it is mediated by issue involvement. Even though issue literacy and factual issue knowledge have an impact on issue confidence, they are not directly or indirectly related to issue involvement and issue processing motivation regarding GMO labeling issues. The supports of the assumption allow this

study to continue to examine whether the subjective message processing path can be manipulated by extraneous triggering.

The conceptualization of instant public may find application in understanding several key issues of current circumstances, going beyond non-profit or activists' public mobilization context. At first, companies' public release to make beneficial public atmosphere to pass a regulation or policy to promote their business, especially, when they launch items with new technology, which have possibilities of unverified backfires. For example, the issue of self-driving car approval is successfully moving on step-by-step based on overwhelming supportive public opinion and being waited for commercialization. Public might accelerate this process supports no matter how many supporters are actually willing to purchase the self-driving car. Furthermore, current fake news phenomenon especially related recruiting political supporters in an election period, also might be examined and explained with the concept of instant activism and the instant public.

Regardless of the influence of social media hoax, it is undeniable that spreading hoax to manipulate publics is an unethical method, which is threatening the spreaders' moral legitimacy. Even though this study suggests partial examination about social media hoax by adopting as an external triggering for instant activism, further research is needed for comprehensive examination of social media hoax, considering the impact.

Although further research is needed about this topic, this study theoretically contributes to expanding activism and public segmentation literature in the context of

politicized scientific issues. Proposing new concepts (i.e., instant public, instant activism) with supportive empirical data, this study cast new lights on a theoretical approach, which have been excluded from previous communication research. Notably, this thesis does not aim to criticize and replace previous theories (i.e., motivated reasoning theory, and the situational theory of problem solving). Following the guidance of previous theories, this study tried to explain new phenomena, which have been emerged from social media communication environment.

This thesis suggests practical insights to both social movement organizers and publics. This study demonstrated the limitations of pseudo-activism for public relations practitioners. For general populations, this study expected to call careful attention in engaging social movement without deliberative considerations. Moreover, being an early attempt to examine social media hoaxes and GMO labeling issues empirically, this study suggests comprehensive theoretical and practical explanations understand the current social issues.

Limitations and Future Research

Although the constructs emerging from this study provide useful applications for theory development and testing for the concept of instant activism, further work is needed to refine the characteristics of the instant public. As a preliminary step for developing the concept of instant activism and the instant public, the study carefully assessed the process of instant triggering and the characteristics of the concepts. However, the study relied on limited data from two experiments with an issue. To establish generalizability, further work with different issues must be done or other experiment design, such as a

week interval repeated measurement after showing stimuli, must be utilized. Moreover, although this study adheres to the previous view toward pseudo-public, which expects their evolving to a meaningful public, this study also need to examine the possibility of instant publics' evolving to a chronic active public.

This study tends to under evaluate individual's rational literacy and oversimplify their personalities. In this regard, it calls careful consideration to generalize the findings of this study to various situations and diverse personals. However, this study would suggest a meaningful explanation understand lay individuals who depend on false information and the consequences for the current society with the popularity of social media and diffusion of innovative technologies.

This study has limitations from time and budget constraints as a Master's thesis. This study theoretically proposed a concept of the instant public to explain the effects of instant activism. However, this study did not suggest empirical data to show who are instant publics. Although the two experiments were fortunate to empirically analyze how people engage in issue processing and supportive actions as a reaction of the instant activism, this thesis could not try to segment the experiment participants into different public groups, as well as instant publics. Thus, future research is requested to suggest empirical evidence for the new concepts and type of publics.

This study examined individuals' issue principles to show the limitations of instant activism. Even though the theoretical concept of issue principles was useful to give answers to the broad research questions, this study has limitations to operationalize and measure the principles. To operationalize the principles, this study used general

purchase intentions and willingness to pay costs. However, the relationship between the principles and the two measures may not be directional. There are possible mediators between them such as issue commitment (e.g., Keh & Xie, 2009). Thus, elaborated scales should have discussed and adopted.

Even though this study focused on non-profits' spreading hoax strategy as a real-world example of instant activism, this study does not claim that all non-profits take unethical public mobilization strategy as well as spreading a hoax. Moreover, some of the activists use these strategies because of lack of factual knowledge without specific purposes to deceive lay people (Kata, 2010; Krishna, 2016). Future studies regarding which kinds of non-profits organization more actively adopt the instant activism, as well as hoax strategy, are requested.

Conclusion

By proposing a possible concept of instant public and testing its applicability in social media and GMO labeling issue context, this study contributes to further advancement in activism and public segmentation literature. Also, this study demonstrates the relative predictive power of social media hoax regarding individuals issue awareness, motivation, and behavioral intention for communicative actions.

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Appendix A: Questionnaire for Study 1

GMO issue literacy

True/False/Don't know Responses

1. GMO stands for genetically modified organism (True)
2. Genetic modification of food involves the laboratory process of artificially inserting genes into the DNA of food crops or animals (True)
3. When you purchase products labeled 100% organic or all natural, ingredients in these products are not allowed to be produced from GMOs (False)
4. Canned and processed foods do not contain GMOs (False)
5. Produce cannot contain GMOs (False)
6. Some plants are made resistant to pests by using a gene from bacteria (True).

GMO labeling issue knowledge

Yes/Maybe/No Responses

1. I can explain what the new GMO labeling law is
2. I have heard about the arguments around the new GMO labeling law
3. I know that the federal government has adopted the indirect way of GMO labeling, such as QR codes or ARS
4. I know the difference between the direct ways and the indirect ways for GMO ingredients labeling
5. I know how the new federal law is different from a Vermont law on GMO labeling.

GMO labeling issue confidence

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. Compared to most people, I know more about GMO labeling issues
2. I am knowledgeable about GMO labeling issues

3. I know a lot about GMO labeling issues
4. I classify myself as an expert in GMO labeling issues.

GMO labeling issue involvement

To what extent to which GMO labeling issues under consideration is of personal importance? (7-point bi-polar scale)

1. Insignificant 1 2 3 4 5 6 7 Significant
2. Do not matter to me 1 2 3 4 5 6 7 Do matter to me
3. Unimportant 1 2 3 4 5 6 7 Important
4. Of no concern 1 2 3 4 5 6 7 Of much concern
5. (Reversed)Serious 1 2 3 4 5 6 7 Not serious
6. Irrelevant 1 2 3 4 5 6 7 Relevant

GMO labeling issue processing motivation

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. I am curious about GMO labeling issues
2. I often think about GMO labeling issues
3. I want to better understand GMO labeling issues

Overall Internet Use

How much do you use the internet on a typical day?

1) Never
2) Less than once a day
3) 1 to 3 times a day
4) 4 to 6 times a day
5) 6 to 7 times a day
6) 8 to 10 times a day
7) More than 10 times a day

Social Media Active Use

In the past month on social media sites, how often do you use it for the following activities?

(1: Never – 7: more than 10 time a week):

1. Posting personal experiences or thoughts
2. Liking/loving/reacting to a post
3. Replying/commenting to others' post/tweets
4. Sharing or retweeting others' post

Distrust

To what extent do you trust the groups? (7-point bipolar scale)

*Generally, **non-profit** organizations are ( ).*

1. Good 1 2 3 4 5 6 7 Bad
2. Pleasant 1 2 3 4 5 6 7 Unpleasant
3. Favorable 1 2 3 4 5 6 7 Unfavorable.

***JustLabelIt** is ( ).*

1. Good 1 2 3 4 5 6 7 Bad
2. Pleasant 1 2 3 4 5 6 7 Unpleasant
3. Favorable 1 2 3 4 5 6 7 Unfavorable.

*Generally, **politicians** are ( ).*

1. Good 1 2 3 4 5 6 7 Bad
2. Pleasant 1 2 3 4 5 6 7 Unpleasant
3. Favorable 1 2 3 4 5 6 7 Unfavorable.

Political Consumerism

please rate your agreement on each statement regarding your general attitudes toward politics. (1 = strongly disagree, 7 = strongly agree):

1. I think it is a good thing when brands get involved with political issues
2. Brands (corporations) should support political issues that reflect their values
3. I would personally support a brand or company more if they supported a political issue I support
4. I would boycott a brand or company if they supported a political issue I oppose

Political Conservatism

Please indicate your political orientation on the following scale:

- Very conservative
- Conservative
- Somewhat Conservative
- Neither
- Somewhat liberal
- Liberal
- Very liberal

Age

what year were you born? ( )

Gender

What is your gender?

- Male
- Female

Ethnicity

What is your racial/ethnic background?

- White or Caucasian (non-Hispanic)
- Black or African American
- Asian
- Hispanic or Latino
- Native American or Alaska Native
- Native Hawaiian or other Pacific Islander
- Other or Mixed Race

Income

Approximately, how much total combined money do all members of your HOUSEHOLD earn in a typical year?

- $0 - $4,999
- $5,000 - $9,999
- $10,000 - $14,999
- $15,000 - $24,999
- $25,000 - $34,999
- $35,000 - $49,999
- $50,000 - $74,999
- $75,000 - $99,999
- $100,000 - $149,999
- $150,000 or more

Education

What is your highest level of education?

- Less than high school
- Completed some high school
- High school graduate or equivalent
- Completed some college, but no degree
- College graduate

- Completed some graduate school, but not degree
- Completed a graduate degree

Manipulation Check

How do you feel about GMO labeling issues after viewing the content above? Please answer based on the content you've just viewed. (1 = strongly disagree, 7 = strongly agree):

1. It seems like the Republicans are in favor of the GMO labeling with QR codes (Manipulation for Political Ideology)
2. There is a group of people behind GMO labeling issues, who are trying to purposely mislead the public (Manipulation for Hoax strategy)

Appendix B: Stimuli for Study 1

Condition 1 for Study 1 = Political Ideology Presence x Hoax Presence

Condition 2 for Study 1 = Political Ideology Presence x Hoax Absence

Condition 3 for Study 1 = Political Ideology Absence x Hoax Presence

Condition 4 for Study 1= Political Ideology Absence x Hoax Absence

Appendix C: Questionnaire for Study 2

Problem Recognition

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. GMO labeling issues are serious social and national problems
2. GMO labeling issues should be dealt with more seriously by the government and related organizations
3. There should be immediate efforts to resolve GMO labeling issues.

Constraint Recognition

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. The government and related organizations will consider opinions from a person like me on GMO labeling issues (Reversed)
2. If I try, opinions from a person like me on this issue can affect regulations related to GMO labeling issues (Reversed)
3. I (my efforts) can help in resolving GMO labeling issues (Reversed)

Involvement Recognition

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. GMO labeling issues are significantly related to me
2. GMO labeling issues potentially affect my family members/friends
3. I am connected with GMO labeling problem and its consequences.

Situational Motivation

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. I am curious about GMO labeling issues
2. I often think about GMO labeling issues.
3. I want to better understand GMO labeling issues.

Reference Criterion

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. I am confident about my knowledge about GMO labeling issues
2. I strongly support a certain way of resolving GMO labeling issues
3. I have a preference for how GMO labeling issues should be settled
4. I am pretty sure that I know how to solve GMO labeling issues
5. Past experience has provided me with guidelines for solving GMO labeling issues.

Communicative actions for problem solving

Information Seeking

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. I will search for more information about GMO labeling issues on Internet
2. I will search for more information about GMO labeling issues on the websites of the WHO or experts in the related industry
3. I will search for news articles or blog/social media postings related to GMO labeling issues
4. I will spend time and effort to find information related to GMO labeling issues.

Information Attending

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. I will pay attention to Internet/TV and/or radio programs discussing GMO labeling issues
2. I will pay attention to family members/friends who discuss GMO labeling issues
3. If the WHO and/or related non-profit organizations publish/post available information on GMO labeling issues, I willing to read them.

Information Forefending

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. Now, I will try to be able to judge whether the information related to GMO labeling issues are credible/helpful or not
2. I will try to know who provided false information related to these GMO labeling issues
3. I will have a selection of trusted sources that I can check for updates on these GMO labeling issues.

Information Permitting

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. I will welcome any information about the problem around GMO labeling issues
2. I will be interested in all views on the problem around GMO labeling issues
3. I will listen to media reports on GMO labeling issues even if I didn't agree with them

4. I will like to discuss GMO labeling issues with people who disagree with my opinions to broaden my perspective

Information Forwarding

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. I am willing to spare my time to discuss GMO labeling issues with someone I do not know well
2. When there are opportunities, I will explain GMO labeling issues to my family members and/or friends
3. I will (often) have conversations with people around me about GMO labeling issues

Information Sharing

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. Although I am interested in GMO labeling issues and participate in related conversation, I will not lead the conversation aggressively
2. My family members/friends tend to ask my opinions about GMO labeling issues

   I will join in conversations about GMO issues if someone else brings them up

Overall Internet Use

How much do you use the internet on a typical day?

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*Generally, **politicians** are ( ).*

1. Good 1 2 3 4 5 6 7 Bad
2. Pleasant 1 2 3 4 5 6 7 Unpleasant
3. Favorable 1 2 3 4 5 6 7 Unfavorable.

Corporate cynicism

please rate your agreement on each statement regarding your general attitudes toward corporations (1 = strongly disagree, 7 = strongly agree):

1. Most corporations do not consciously promise more than they can deliver
2. Corporations are primarily self-interested
3. Corporations do not understand what matters to society
4. Corporations are capable of solving important problems.

Political Consumerism

please rate your agreement on each statement regarding your general attitudes toward politics (1 = strongly disagree, 7 = strongly agree):

1. I think it is a good thing when brands get involved with political issues
2. Brands (corporations) should support political issues that reflect their values
3. I would personally support a brand or company more if they supported a political issue I support
4. I would boycott a brand or company if they supported a political issue I oppose

GMO issue literacy

True/False/Don't know Responses

1. GMO stands for genetically modified organism (True)
2. Genetic modification of food involves the laboratory process of artificially inserting genes into the DNA of food crops or animals (True)
3. When you purchase products labeled 100% organic or all natural, ingredients in these products are not allowed to be produced from GMOs (False)
4. Canned and processed foods do not contain GMOs (False)
5. Produce cannot contain GMOs (False)
6. Some plants are made resistant to pests by using a gene from bacteria (True).

GMO labeling issue knowledge

Yes/Maybe/No Responses

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2. I have heard about the arguments around the new GMO labeling law
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4. I know the difference between the direct ways and the indirect ways for GMO ingredients labeling
5. I know how the new federal law is different from a Vermont law on GMO labeling.

General purchase intention

Please indicate the degree to which you agree or disagree with the following statements (1 = strongly disagree, 7 = strongly agree):

1. I often purchase foods that contain GMOs (Reversed)
2. I never consume any foods that contain GMOs.
3. I tend to purchase non-GMOs over GMOs although they often cost more
4. I support a use of genetic modification technology for producing foods (Reversed).

Willingness to pay costs

Please indicate how you are willing to follow each tactic below in your everyday life (1 = definitely not, 7 = definitely yes):

1. Buy food labeled 100% organic
2. Recognize fruit and vegetable label numbers

3. Buy 100% grass-fed meat
4. Seek products that are specifically labeled as non-GMO or GMO-free
5. Shop foods locally
6. Buy whole foods, rather than foods that are processed or prepared
7. Grow your own food.

Political Conservatism

Please indicate your political orientation on the following scale:

- Very conservative
- Conservative
- Somewhat Conservative
- Neither
- Somewhat liberal
- Liberal
- Very liberal

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what year were you born? ( )

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Appendix D: Stimuli for Study 2

Condition 1 for Study 2 = Hoax Presence x High Issue Involvement

GMO labeling is a hoax! YOU are intentionally misled with deceptive GMO labeling even by HERSHEY'S America's No.1 selling chocolate brand.

THE CONSPIRACY of the GMO labeling targets YOU!
1) 33% of U.S. adults do not have smartphones,
2) And, 93% of adults do not use QR codes frequently,
3) Thus, YOU can't or don't read QR codes to check whether a food product contains GMO ingredients.

Condition 2 for Study 2 = Hoax Presence x Low Issue Involvement

GMO labeling is a hoax! People are intentionally misled with deceptive GMO labeling.

THE CONSPIRACY of the GMO labeling:
1) Not all people have smartphones,
2) And, not all people use QR codes frequently,
3) Thus, many people can't or don't read QR codes to check whether a food product contains GMO ingredients.

IF PEOPLE DON'T SCAN THIS, THEY ARE DECEIVED!

Condition 3 for Study 2 = Hoax Absence x High Issue Involvement

YOU need to scan QR codes to know if a product contains GMOs, even those made by HERSHEY'S, America's No.1 selling chocolate brand.

YOU should consider the fact that;
1) 33% of U.S. adults do not have smartphones,
2) And, 93% of adults do not use a QR code frequently,
3) Thus, it is possible that YOU have difficulties in reading QR codes to check whether a food product contains GMO ingredients.

Condition 4 for Study 2 = Hoax Absence x Low Issue Involvement

People need to scan a QR code to see whether the product contains GMOs.

GMO labeling should consider the fact that;
1) Not all people have smartphones,
2) And, not all people use QR codes frequently,
3) Thus, it is possible that many people have difficulties in reading QR codes to check whether a food product contains GMO ingredients.